

# Customer Relationship Management Intervention Application (CRM) on Drug Interaction and Quality Improvement of Life Patients with Hypertension

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**Abstract:** *Customer Relationship Management (CRM) applications are one way to improve services for patients. This application can be used to overcome the problem of patient non-compliance in the consumption of antihypertensive drugs that must be consumed continuously to control blood pressure levels. Hypertension is a metabolic disease that is often accompanied by other diseases, so that it is handled using polypharmacy drug therapy and the possibility of drug interactions can occur. This study aims to see the intervention of Customer Relationship Management (CRM) applications in reducing blood pressure so as to improve the quality of life in patients with Diabetes Mellitus and drug interactions that occur due to the use of polypharmacy drugs. This research method was carried out using a CRM application with a research design conducted in a cross sectional perspective. This research was conducted in one of the health centers in the city of Medan against patients with hypertension. Data analysis was carried out descriptively using the Chi-Square test of the SPSS Advanced statistic 16.0.*

*The results of this study note that the highest gender category in hypertensive patients is 52.5%, the age category with the most hypertension is > 60 years age group as much as 70%, the most use of single antihypertensive drugs is a calcium channel blockers (amlodipine) 75%, and the most widely used combination is the calcium channel blockers with angiotensin receptor blockers (amlodipin + Valsartan) 15%. This study showed a significant correlation between blood sugar levels before and after using the CRM application intervention using test analysis. Chi-square can get p value 0.034 ( $p < 0.05$ ).*

**Keywords:** CRM, hypertension, drug interactions.

## INTRODUCTION

Antihypertensive drugs are given regularly so that the drug is always in the blood circulation to perform its function, namely controlling blood pressure. Uncontrolled hypertension results in 7 million deaths in productive age and results in 64 million disabilities. Hypertension is the number 3 cause of death after stroke and tuberculosis which reaches 6.7% of the death population at all ages in Indonesia. The Ministry of Health said that hypertension and its complications can be prevented by a healthy lifestyle such as regulating diet by consuming low-salt and low-fat foods, as well as regular blood pressure control.

According to the National Joint Committee 7 (JNC7), normal blood pressure is systolic blood pressure <120 mmHg and diastolic <80 mmHg. Hypertension was defined as the level of systolic blood pressure  $\geq$  140 mmHg and or diastolic BP level  $\geq$  90 mmHg<sup>1,2</sup>.

Patient-oriented services are one of the important factors that can support patient recovery. Monitoring and communication with patients is one aspect that is taken into account to improve the

quality of patient health. Customer Relationship Management (CRM) is an application that is built with the open source PHP program to store patient data (medical records) in the form of name, age, gender, telephone number, symptoms of illness, medication used, advice and time of visit. This CRM application is designed to remind operators to contact patients by phone regularly to ask about the patient's condition and provide advice to improve the quality of life of patients. Based on this background, researchers are interested in studying the use of Customer Relationship Management (CRM) applications for hypertensive patients in primary health centers in South Area Medan.

## MATERIAL AND METHODS

This research was conducted at the primary health center in South Area Medan from May to July 2018. This type of research is an approach perspective where the data are collected and expressed in the form of words arranged in sentences which are communication between researchers and hypertensive patients. The design of this study uses cross sectional design with CRM applications (FIGURE 1) as a substitute for medical records of patients. Analysis of the study using SPSS devices using the chi square test method to see the relationship before and after CRM intervention.

Fig 1:Customer Relationship Management

## RESULT AND DISCUSSION

TABLE 1 shows the number of patients with female gender who have more hypertension than men, which is 21 people with a percentage of 52.5% and 19 people with a percentage of 47.5% for men. The results of the study in the South Medan Area Health Center there were 5 people with a percentage of 12.5% aged 36-49 years and patients with age 50-59 years as many as 7 people with a percentage of 17.5%, and patients aged over 60 years were 28 people with a percentage of 70%.

Hypertension is more common in women because increasing age causes a decrease in estrogen levels in women. This decrease in estrogen hormones can have an impact on increasing blood pressure thereby increasing the risk of heart disease<sup>5,6</sup>.

TABLE 1: Patients Demography

Characteristics	Frequency	Percentage (%)
Gender		
Male	19	47,5
Female	21	52,5
Age (year)		
45-59	5	12,5
60-74	7	17,5
75-90	28	70
Total	40	100

TABLE 2 shows that the most widely used single hypertension drug in the South Medan Area Health Center is 30 channel calcium channel blockers (amlodipine) with a percentage of 75%. The most widely used combination hypertension drugs are calcium channel blockers and angiotensin receptor blockers (amlodipine + valsartan) as many as 6 people with a percentage of 15%.

Calcium channel blockers are quite effective in lowering blood pressure. These medicines work directly by relaxing the blood vessels. CCB is a safe antihypertensive drug with good tolerance<sup>3</sup>. CCB works by preventing calcium from entering heart cells and blood vessel walls so that blood pressure decreases. Amlodipine is a category of dihydropyridine CCB which has the advantage of not affecting the function of the heart and does not cause a lot of slowing of the heart rate so that this drug is included in the first line treatment for blood pressure lowering drugs. CCB lowers blood pressure effectively especially when combined with other drugs<sup>4</sup>.

**TABEL2:** Antihypertensive group in Medan Area Selatan primary health care

Variation	Antihypertensiv group	Medicine name	Frequency	Percentage (%)
Single	Calcium channel blockers	Amlodipine	30	75
		Amlodipine + candesartan	2	5
Combination	Calcium channel blockers + Angiotensin receptor blockers	Amlodipine + Irbesartan	2	5
		Amlodipine + Valsartan	6	15
		<b>Total</b>	<b>40</b>	<b>100</b>

TABLE 3 shows that the use of non-hypertensive drugs in hypertensive patients most widely used in the Medan Area South Health Center is an anti-diabetes group (metformin) as many as 11 people with a percentage of 27.5%.

Metformin is an antidiabetic drug that works by increasing insulin sensitivity and reducing insulin circulation in type 2 diabetes. Metformin is a first-line antidiabetic drug because it is relatively safe, inexpensive and effective<sup>1,2</sup>.

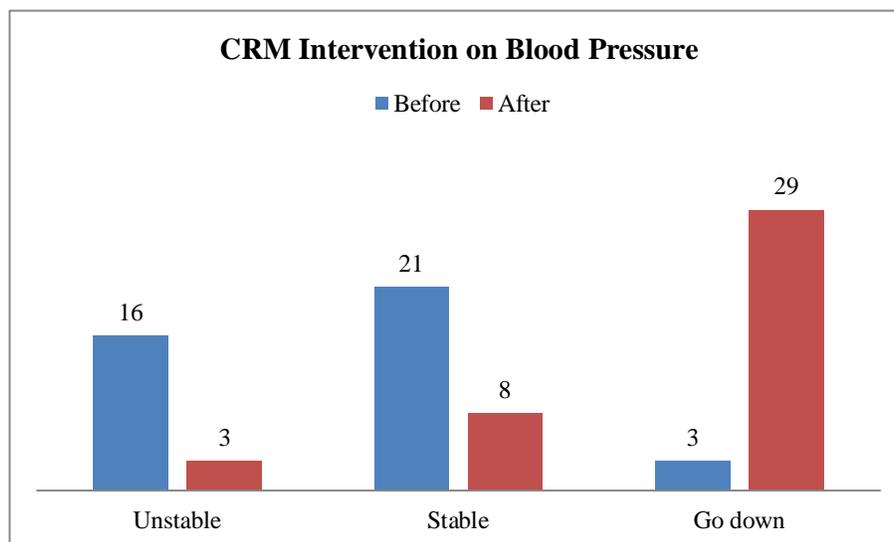
**TABLE 3:** Nonhypertensive drugs in hypertensive patient

Non-Antihypertensiv group	Medicine name	Frequency	Percentage (%)
Antidiabetic	Metformine	11	27,5
	Glibenclamide	1	2,5
	Glimepirid	1	2,5

Antihyperlipidemia	Simvastatine	10	25
Antihiperurisemia	Allopurinol	4	10
Analgesics /Antipyretics	Paracetamol	5	12,5
Antiplatelet	Miniaspi 80 mg	2	5
Expektorant	GliserilGuaiakolat	3	7,5
NSAID	Na.Diklofenac	2	5
Bronchodilator	Salbutamol	1	2,5
	Total	40	100

Research carried out in 2017 at Pirngadi Hospital on the determination of individual doses for diabetic patients obtained data on metformin used in conjunction with ranitidine, captopril and antibiotics. Metformin is a biguanid class of antidiabetic drug, ranitidine is a GERD drug by inhibiting H<sup>+</sup> receptors and captopril is an antihypertensive drug. In this study antibiotics were also used in conjunction with metformin because the object of the study was hospitalization diabetic patients of chronic renal disorder complications<sup>7,8</sup>. Research on elderly patients with metabolic syndrome in Haji Adam Malik Medan hospital in 2014 was also found in many polypharmacies, resulting in drug interactions that could be at risk for minor, moderate and major, so polypharmacy needs to be considered<sup>9</sup>.

FIGURE 2 shows the relationship of Customer Relationship Management (CRM) before and after the use of CRM on blood pressure of hypertensive patients. After the chi-square test was conducted, it was found that there was a significant relationship between CRM applications and drug therapy monitoring for blood pressure reduction in hypertensive patients in the Medan Area South Health Center with a p value (p value) of 0.034 (<0.05).



**Fig 2:** CRM Intervention on Blood Pressure of Hypertension Patients

### CONCLUSION

Customer Relationship Management (CRM) can help overcome Drug Related Problems (DRP) in hypertensive patients who get polypharmacy. CRM can function as a medic record as well as a reminder to medical officers to contact patients regularly. CRM application interventions in hypertensive patients have succeeded in significantly reducing blood pressure. The use of CRM can be a success for patient-oriented pharmaceutical services.

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