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CARDIOVASCULAR DRUG INTERACTION;

EVALUATION IN POLY PRESCRIPTION IN THE CITY OF KARACHI, PAKISTAN.

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ABSTRACT… Introduction: Cardiovascular drug interaction is the alarming and becoming leading cause of death in the society of Karachi Pakistan where the prevalence rate of CVS diseases in urban areas is very high. **Objective:** The aim was to evaluate the cardiovascular interactions in poly prescription in the city of Karachi, Pakistan. **Study Design:** The methodology adopted for this study is cross sectional study. **Material & Methods:** In which verbally and signed informed consent prepare which help to limitize the biasness. **Results:** In this study the determination of the percentage of interactions is about 30%.The gender which is most susceptible for interaction is females. The Significance or consequences of interaction would measured by minor, moderate and major level. In our study minor is about 28, moderate is about19 while Major is about 9.The most untoward effects which was seen was bradycardia and the class of drug which lead for interaction is Beat and ACE blockers in the prescribing practice and some severe interaction lead to life threatening. **Conclusion:** The main result which is concluding for this study is the huge number of interaction which is found in the prescription creates life threatening circumstances. With the proper consultation and time we can minimize the interaction as well as the health scenario can be improved and the quality of life can be improved.

Key words: Drug Interaction, Gender most susceptible, adverse effects, cardiovascular classes of drugs.

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INTRODUCTION

During the last century, there has been spectacular improvement in the field of pharmaceutical sciences. Research studies evaluated that only two third of population can get medical consultation on medical care behalf, However rest of the population have severe multiple type of diseases due to the medication they have taken. The untoward effects some times can have a sinister effects, which discriminates the distance between existence and bereavement. Some time there is a temporary aliment between the wellbeing and casualty. Patient even not aware about the cause either the drug and how can prevent from the perilous effects of the drugs[3,4].

In some situations, it is noted that only 25-60% of patient have given response and participated for the evaluation of drug interaction. The estimated range is about 3%-20%[1].A common concept regarding drug interaction is this if a patient using multiple drug simultaneously that potential of drug interaction is about 28% with 6 drugs and with 8 drugs it is about 35[2]. To avoid drug interaction a detailed list must be provided to the patient. Due to the lack of time Unfortunately physicians may have difficulty for taking medical history especially those who have taking herbal remedies and OTC medications and nutrients. Multiple factors participate during drug interaction like "Pharmacokinetics, Pharmacodynamics, Cytochrome P450, Lysosomal testing, Genetic Polymorphisms, Diseases stages, Age, Protein transport and different enzymatic tests" etc[5,6,7,8].

Different CVS drugs have different response like ACEs Inhibitors, Na^+, K^+, Ca^+ channels etc. The cardiovascular drug classification contains different agents like Beta blocker, Ca channel blocker, ACE inhibitor etc but the use of beta blocker and diuretics are extended. Different low doses drugs have interaction with Clopidogrel Dipyridamole and cause Q,T elevation[9].

The Drug Interaction can be minimized if professional distinguishment, work justice and proficient

orientation have been taken. Due to the knowledge and time management it can be minimized from the current market. Pakistan include the list of developing countries where the global burden of the cardiovascular diseases is 86% this numeral figure have evaluated due to the low income, poverty based deaths[10]. But no attention, no strategy provided for minimizing the interaction.

METHODOLOGY

The general objective of the study was Evaluation of Cardiovascular Drug Interaction in Poly Prescription in the city of Karachi, Pakistan. While the general objectives are to evaluate the percentage of cardiovascular drugs in poly prescriptions and determine the gender disposition off and the significance level of interaction. To verify the different CVS diseases in poly prescription and determine the most repetative CVS adverse effects and identify the interaction between cardiovascular class of drugs.

To carry out this study primary, secondary and tertiary care hospitals have been targeted. With consent the prescriptions have been taken for evaluation from both Government and Private sector. Randomly 1000 prescription from the different cardiovascular departments have been included. Consent has been taken in oral and written form. Those physicians, pharmacist and paramedical staff who were not willing were exclude from the study. There was no tool to introduce for study evaluation. For sample size distribution stratified sample have adopted. Small division of population divided into smaller groups. A small group were established which was based on different participants having mutual attributes or descriptions. A small random group was occupied in a integer comparative to the group size while compared to the inhabitants. 18 towns of Karachi have been divided for data collection. In all health units after following special criteria like valid prescription, prescriber name or sign, strength and name of doses, name of the institutions were its prescribed.

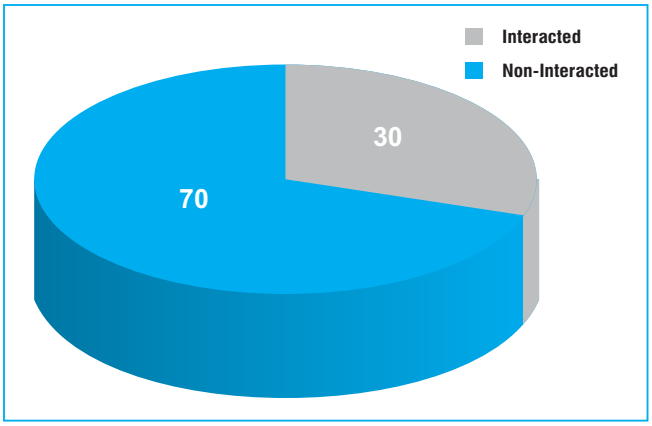
Data randomly collected about thousand prescriptions and 56 were the cardiovascular drug interactions. These snap short studies are planned due to the feasibility and avalibility of the patients and prescribers. Confidentiality of the data has been assured. The data have been analyzed through the soft ware SPSS version 19. Different variable have been made then code for all data put it out for statistical purposes and then frequencies, cross tabulation, graphs and different values have been evaluated. SPSS is very useful, quick in social sciences. The valid and authentic prescription have been evaluated i.e. if anyone adopted complete protocol of prescription then it was the part of the study, without prescription and protocol the prescription was not the part.

RESULTS

Total number of poly prescriptions	1000
Excluded prescriptions	0
std(X)	.45849
“Minimum”	1.00
“Maximum	2.00
“Sum”	1700.00

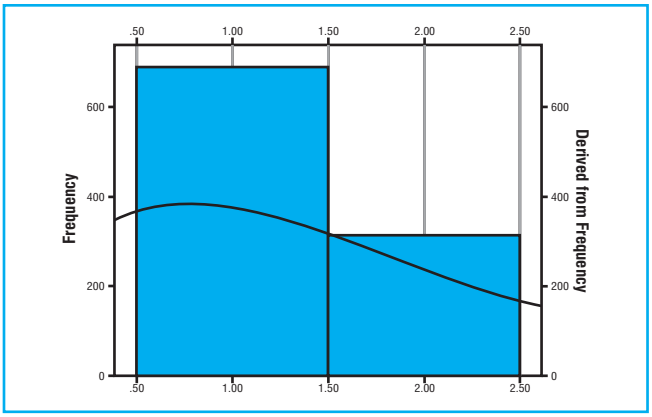
1. Percentage of cardiovascular drugs in poly prescription

	f	%	“Cumulative %”
Interacted poly prescriptions	300	30.0	30.0
Non-Interacted prescriptions	700	70.0	100.0
Total	1000	100.0	



		f	%	Compelling %	"Cumulative %"
v	♂	688	68.7	68.9	68.9
	♀	312	31.2	31.1	100
	"Total"	1000	100.0	100	

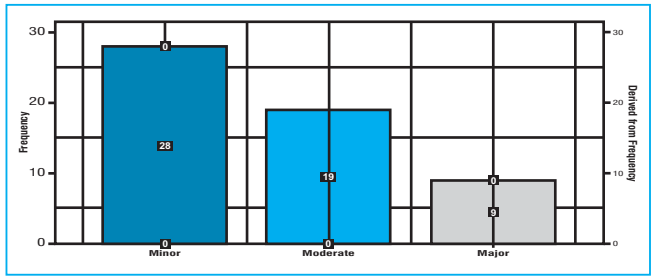
2. Gender disposed off interaction



Valid number of cardiovascular interaction in poly prescriptions.	56
Except cardiovascular number of prescriptions.	944
X	1.6607
Std. (X)	.09960
$\tilde{x}$	1.5000
Mo	1.00
"Std. Deviation"	.74533
V	.556
"Skewness"	.651
"Std. Error of Skewness	.319
"Kurtosis"	-.901
"Std. Error of Kurtosis"	.628
R	2
"Minimum"	1
"Maximum"	3
"Sum	93

3. The significance level of interaction in cardiovascular drugs.

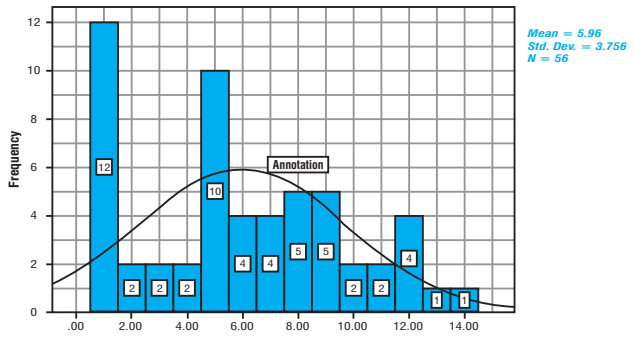
		f	%	Valid %	"Cumulative %"
Valid	Minor	28	2.8	50	50
	Moderate	19	1.9	33.9	83.9
	Major	9	.9	16.1	100
	Total	56	5.6	100	
Missing	System	944	94.4		
	Total	1000	100		



Valid	56
Missing	944
Mean	5.9643
Std. (X)	.50192
$\tilde{x}$	5.5000
Mod	1.00
":Std. Deviation"	3.75603
V	14.108
"Skewness"	.232
"Std. Error of Skewness"	.319
"Kurtosis"	-.905
"Std. Error of Kurtosis"	.628
R	13
"Minimum"	1
"Maximum"	14
Sum	334

4. Grounds of CVS interactions

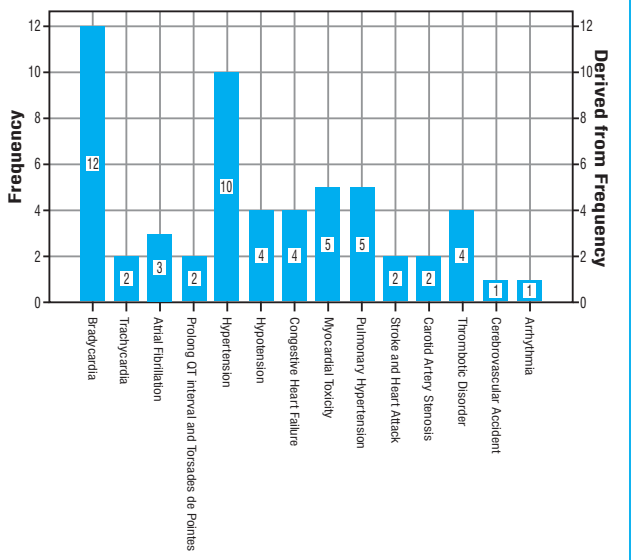
Interaction found in different cardiovascular diseases.	f	%	Valid %	Cumulative %
Bradycardia	12	1.2	21.4	21.4
Tachycardia	2	.2	3.6	25.0
Atrial Fibrillation	2	.2	3.6	28.6
Prolonged QT interval and Torsades de points	2	.2	3.6	32.1
Hypertension	10	1.0	17.9	50.0
Hypotension	4	.4	7.1	57.1
Congestive Heart Failure	4	.4	7.1	64.3
Myocardial Toxicity	5	.5	8.9	73.2
Pulmonary Hypertension	5	.5	8.9	82.1
Stroke and Heart Attack	2	.2	3.6	85.7
Carotid Artery Stenosis	2	.2	3.6	89.3
Thrombotic Disorder	4	.4	7.1	96.4
Cerebrovascular Accident	1	.1	1.8	98.2
Arrhythmia	1	.1	1.8	100.0
Total	56	5.6	100	
Missing "System"	944	94.4		
Sum	1000	100		



Valid	57
missing	943
Mean	5.9123
Std. (X)	.49577
$\tilde{x}$	5.0000
Mod	1.00
"Std. Deviation"	3.74300
V	14.010
"Skewness"	.264
"Std. Error of Skewness"	.316
"Kurtosis"	-.894
"Std. Error of Kurtosis"	.623
R	13
"Minimum"	1
"Maximum"	14
"Sum"	337

5. Most repetative CVS adverse effects in poly prescription.

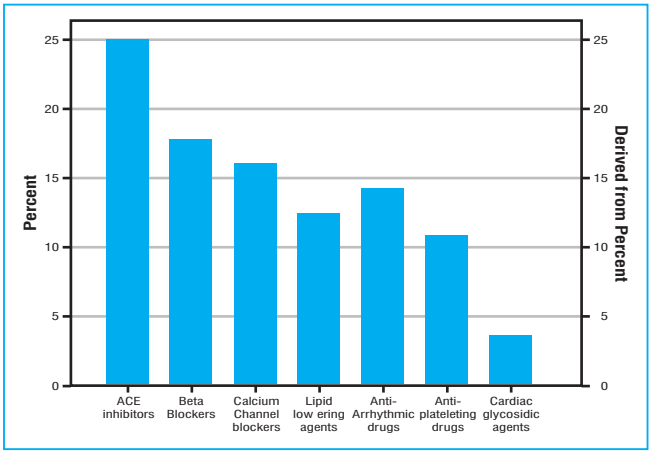
Adverse effects in poly prescription interactions		f	%	Valid %	"Cumulative %"
V	Bradycardia	12	1.2	21.1	21.1
	Trachycardia	2	.2	3.5	24.6
	Atrial fibrillation	3	.3	5.3	29.8
	Prolong QT interval and torsades de points	2	.2	3.5	33.3
	Hypertension	10	1.0	17.5	50.9
	Hypotension	4	.4	7.0	57.9
	Congestive heart failure	4	.4	7.0	64.9
	Myocardial toxicity	5	.5	8.8	73.7
	Pulmonary hypertension	5	.5	8.8	82.5
	Stroke and heart attack	2	.2	3.5	86.0
	Carotid artery stenosis	2	.2	3.5	89.5
	Thrombotic disorder	4	.4	7.0	96.5
	Cerebrovascular accident	1	.1	1.8	98.2
	Arrhythmia	1	.1	1.8	100
	Total	57	5.7	100	
Mis.	"System"	943	94.3		
	Total	1000	100.0	100	100



# Cardiovascular interaction in prescriptions.	56
Except cardiovascular interaction	944
x	3.1964
"Std. Error of mean"	.24761
$\tilde{x}$	3.0000
Mod	1.00
"Std. Deviation"	1.85295
V	3.433
R	6
"Minimum"	1
"Maximum"	7
"Sum"	179

6. Interaction between cardiovascular classes of drugs

Cardiovascular classes responsible for drug interaction		f	%	Valid %	Cumulative %
V	ACE inhibitors	14	1.4	25.0	25.0
	Beta blockers	10	1.0	17.9	42.9
	Calcium channel blockers	9	.9	16.1	58.9
	Lipid lowering agents	7	.7	12.5	71.4
	Anti-Arrhythmic drugs	8	.8	14.3	85.7
	Anti-plateleting drugs	6	.6	10.7	96.4
	Cardiac glycosidic agents	2	.25	3.6	100.0
	Total	56	5.6	100	
Missing	"System"	944	94.4		
	"Total"	1000	100		



DISCUSSION

The standard mean for cardiovascular drug is (1.7000) while standard error of skewness is (0.077) and skewness is about (-.874).The cardiovascular drug interaction is 30% found from the 1000 sample size which was quite high as compare to the WHO recommendation i.e. 4-8%. In which 68.7% were females. The Significance level of interaction for minor is 28%, moderate 19% and for major it is about 9%.

Cardiovascular Drug interaction seen highly for the treatment of bradycardia and hypertension (12-10%).Mostly drug interaction caused the condition of bradycardia (12%), Hypertension (10%),Myocardial toxicity (5%) and pulmonary hypertension (5%) ,Hypotension (4%),CHF (4%),Atrial fibrillation(3%) and 2% prolongation of QT interval, stroke and heart attack, carotid artery stenosis, 1% Cerebrovascular accident and arrhythmia. Most of the interaction found in the class of ACEs inhibitors was 14% and beta blockers is about 10%.

CONCLUSIONS

In about 17 million of population, the rate of cardiovascular interaction is very high. Through dedicated work, knowledge, time management and professionalism orientation it can be limitized. Concerned efforts are required to minimize the cardiovascular drug interaction in poly prescription if focusing on drug dispensing, patient counselling, patient histories and patient compliance.

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"The only real mistake is the one from which we learn nothing."

Henry Ford