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DRUG INTERACTION IN POLY PRESCRIPTIONS; EVALUATION AND MANAGEMENT

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ABSTRACT

Drug Interaction is increasing day by day leading to the major manifestations of Health care issues. According to "WHO" Drug Interaction was estimated to be from 6.2 % to 6.7 % per year. According to the "Journal of the American Medical Association" (JAMA 1996) reported that 108,000 American died in hospital and 2.2 million American had reaction to "FDA" permitted medication. To overcome for this scenario there are numerous sources of in sequence which accessible to Prescriber, Pharmacist and User about the Drug Interaction. In 2009, in the UK, drugs are gradually more obtainable over the counter and on-line devoid of prescription. Additionally, close at hand is widespread use of numerous herbal medicines from relatively under-regulated suppliers and the constituents of such products are often not known. This clinical reality of the widespread use of potent medicines – be they allopathic or traditional showed us the need for a practical hands-on guide that aims to be a compact, succinct and accessible source of Information for practitioners, prescribers and the public about adverse drug-Interactions. In this Cross Sectional Study total 300 Prescriptions were collected after analysis 250 informed consent have filled. Rest in 50 prescriptions the prescribing pattern errors have found including consent displeasure. In 250 prescriptions 70 is interacted and 180 is non-interacted or safe, without any significance level. The statically data have given below and graph demonstrates the interaction in all clinic, Government and private sectors hospitals. In this study poly prescription evaluation in primary, secondary and tertiary care hospitals. The percentage of interacted and non-interacted prescription is 28% in the city of Karachi, Pakistan. Female genders were more susceptible for interaction due to various causes about 17.6% and Male about 10.4% out of 28%.The major significance level is about 4% in Major Interaction, Moderate is about 13.6% and Minor is about 14.8%. Most Interaction Found in Cardiovascular is about 11.6% along with it 2.0 % interaction in Angina and 1.2% in Arrthymias.

Keywords: Drug Interaction, Percentages, Gender Susceptible, Significance Level, Systematic Pharmacological Aspects, Awareness, Benefits for Patients.

INTRODUCTION

Drug Interaction refers to an adverse drug response which is produced by the co-administration and effects the action of a drug so the response of the drug may be augmented or decreased, and sometimes produces their own response (National Prescribing Services et. al). According to National Prescribing service interaction may be in between drugs, between drug and food, and between drug and herb etc .Some drug interactions are accidental or taken place due to the abuse, unawareness and therapeutic relationship of the vigorous components and the pertinent substance involve. Numerous of interaction occurs because of the alterations in metabolism (Elizabeth et al). Additionally enzymes are characteristically activated all the way through meeting of nuclear receptors. For Evaluation and Management of Drug interaction, in 1948 National war Formulary published but slowly and surely its effectiveness reduced but in1976 British National Formulary was discontinued again. After 1976, again in BNF born in 1981 after a long lasting effort, slowly and gradually the BNF improved. The new British National Formulary has devotedly the number of pages in different issues of different interaction and document

the percentage of the drug interaction list (Wade OL et al.)

According to McNy M.Jck Trevor view the predicament arises and assessment of the different achievement of various folks in opposition to the possible destruction to the centre of population. According to the Pharmaceutical and Clinical Research Journal in the region of Asian Volume II in this contact is obvious like clinical reaction to the management or co-exposure of a prescription by means of an additional matter with the intention of modifies the reaction to the drug. In volume 2 of October it is presented with the intention of 20-30% of each and every one unfavorable effect. According to the scientist J. Muck & Kuhlmann, have the pharmacological strategies to access drug make contact with is mainly over and over again the second-hand to explain communications, but readily available are an assortment of substances in addition to factors with the intention of be able to medicine. In general encompass the 'food' and drug. Nutritional supplements contact, formulation Excipents in addition to ecological factors interaction. The Substantiation exerts its action on the enzymes cytochrome P450 enzymes within the gastric wall is an important feature which change accessibility by mouth given antineoplastic reagents to facilitate CYP3 A and their constituents.

The evaluation of drug interaction depends upon the types of drug interaction i.e. the Pharmacokinetics related medicinal communication, the Pharmacodynamics related medicinal communication, the relationship of Herbal Medicine, the communication between drug and the food etc.
According to the Researches and studies the evaluation of drug has been recognized through different factors like DIPs, Drug Interaction Checker, and Surface Model Drug Interaction. The foremost objective of the current study is to Drug Interaction; in Poly Prescriptions; Evaluation and Management in our part of the world.

MATERIAL AND METHOD

Study Protocol Design: This is cross sectional study, in which collection of prescriptions on especially design formulated shown to the end of the thesis, including all age groups at different tertiary care hospitals including Government and Private sectors of Karachi with no duration of time limit and Evaluate through Statistical Parameters. The hospital selection was done keeping in view the patients of different economic classes i.e. higher/lower. Prescriptions from the different hospitals, clinics and

general practitioners have been collected. The Prescriptions have been categorized according to Diagnosis, Sex, Age, And No. of drug prescribed. After categorization critically, prescription have been evaluated on the basis of the of drugs which have been prescribed by the prescriber, during all the producer, the patient counseling has already been made and suggested advised in the patients regarding the outcomes of the drugs which have been prescribed by the concern consultant. The concern prescriber have also been contacted and try to convince regarding the errors of the prescriptions. During all this procedure some prescriber appreciated and change his/her prescription after giving a reasonable substitute for the patient. Where has some prescribers are reluctant and has not giving any response despite some valid evidences. The Deduction of the drug interaction from the prescription was studies on the method that have been carried out by William et al.

Sample Size Distribution: For further more purposes of the research the study have been divided into different outlets like
   a. Government Hospital,
   b. Private Hospital,
   c. Secondary Care Clinics and Hospitals,
   d. Primary Care Clinics etc

For this research the stratified Random Sample phenomena had been adopted to minimize the condition of biasness. In this study the Physicians and Patients were not willing to participated were excluded out. The oral informed consent had been followed, while the patients who were open hearted for willing to evaluate their prescription were excluded. The tool was a Questionnaire. The Questionnaire was developed with the help of existing literature and with discussion. It had two portions. One portion includes the Demographic like Age, Sexual category, Basic knowledge etc. The other portion had 35 items those where closed ended questions which includes the options of No, Yes and different personal opinion regarding the Questionnaire.

The items were categorized in 6 further groups which were knowledge, belief, attitude, Perception and learning from the current scenario. The total number of items include in the questionnaire were 35 out of these 35,7 items were added to access the general and demographic questions,2 items were added to access of the Health-Seeking behaviour,7 items were added to access the Drug Interaction knowledge and awareness,16 items were added to access the Drug Interaction attitudes and Care seeking Behaviour ,4

items were added to evaluate the attitude and Stigma regarding Drug Interaction and 5 items were added to analysis the Drug Interaction awareness and Sources of Information.

The Questionnaire was then validated. The Phase validity of the tool was done after it was developed the Research, Patients and Physicians were approach for the Phase validity. The content validity was done to ensure that the each content is monitoring the factor or not. Then pilot testing was done to ensure the validity.

After pilot test modification was done by excluding name and marital status through informed consent foam. The tool was developed in English but it was implemented in Urdu by translating it in Urdu.

Data Collection: Data was collected simultaneously by primary, secondary and tertiary care hospitals of Karachi. Sample size was 300.Data was collected using convenient samplying.

It was a snap shot study selected by the feasibility and avalibility of the prescriptions and practitioners. Data collected almost every area of Karachi to evaluate and manage the situation, and realise the importance of pharmacist. An ethical criterion was followed by verbally taking the consent. Critical criteria were followed and only the willing participants were included. Confidentiality was assured.

Data Analysis: After collection of the data it was analysed using the software SPSS.The version used by 19.Data was entered by making variables. Variable are just the specific objective, for each specific objective a variable formed i.e.

For Interacted it is denoted by 1 and for Non-Interacted it is denoted by 2. Then data was coded. After data entry the data was analysed through different statistical parameter which required .In SPSS the way to find the statistical graph and figures is easiest and simple. The data was string .Frequencies was run in order to check that during data entry nothing is missed. After cross tabulation the percentage was calculated and different table and graphs achieved.

Limitations: The study could have been conducted about the avalibility and feasibility of practitioners and prescriptions. The prescription must be valid i.e. not written on a plain empty page .It must have printed monogram or logo with name and institute, must be readable and not to over write. Prescriptions

must have two or more than two drug. The patients and prescriber was not agreed for participation, it was excluded.

RESULTS

The response rate of the two hundred fifty peoples correspondents overall was found to be 100%.The knowledge which refers to evaluate prescription interaction i.e. interaction and non-interaction. In 250 prescriptions 70 is interacted and 180 is non-interacted or safe, without any significance level.

The statically data have given below and graph demonstrates the interaction in all clinic, Government and private sectors hospitals. Interaction in prescription is a very big issue in third world countries. According to my study the gender susceptible for interaction due to various causes In this study the Minor, Moderate and Major significance level.

Minor significance: level means the effects are usually mild; penalty may be inconvenient or unnoticeable but must not considerably influence the therapeutic ending. Further treatment is frequently not necessary.

Moderate significance: level means the effects may cause worsening in a patient's clinical position. Extra management, hospitalization, or a comprehensive hospital hang about may be necessary

Major significance: level means the special effects are potentially life-threatening or competent of causing permanent damage.

After evaluation the prescriptions different pharmacological systems i.e. cardiovascular, Nervous system, Anticancer, Anticoagulants, Antidiabetic, Endocrine system, Analgesics, Musculoskeletal drugs, Antigout drugs, Anaesthetics, Drug to treat infections,GIT,Respiratory diseases, Metabolic drugs,Obestrics and gyne,Urology and drug abuse different results have been found.

According to this study cardiovascular diseases are more prone to drug interaction. Different cardiac disease shown in the chart has interaction in most of the prescriptions. For assess the knowledge regarding drug interaction, a tool is developed i.e. Questionnaire. This questionnaire is circulated in every age group. The knowledge and awareness in the city of Karachi regarding interaction is given below.

DISCUSSION

The Topic selected for the research was "To identify the drug Interaction in Poly Prescription evaluation and Management" .Now before going in detail the term Drug Interaction is defined as "***The drug Interaction generally refers to an untoward response which appears after the administration of the drug or concurrent of the medicine through an additional component which alter reaction of the medicine by the enduring.***"

In this cross sectional study the Area I covered is Karachi .All Private and Government sector hospital has been covered during the study. According to the current situation the city of Karachi have 13 to 15 million of population .The area of this beta world city is about 3,527 km (1,362 sq mi) .Here the no. of renowned hospital in this "City of lights ", under the administration of the Federal Government is 10, Administration by Sind Government is 16, By City District Government is 11 and the private sector is about 107 but the percentage of the qualified registered Pharmacist in the Hospital setting is about 4-5 %.

Interaction between drugs, food, Pharmaceutical etc be capable of & have philosophical influences on the accomplishment of drug management. Pharmacist is a key person for the management of drug interaction in poly prescription. The scientific connotation of drug interaction is capable of the inconsistent. Some therapies, treatments may effects which create hindrances and cause untoward side effects or therapies malfunction. A number of interactions may have unprofitable effects as well as valuable effects by mounting the drug usefulness or deteriorating the potiential untoward possessions.

The interconnections between the drugs are not at all times treated, other than a number of conditions have improves the therapies and minimizes the side effects. The interactions have received more attention now a day because Pharmacist proves themselves as a key person and only person for drug related issues. After market there is a very less knowledge to prescriber, the manufacturer knows how deals with the drug. The Pharmacist in every rehearsal background needs to be attentive in monitoring potiential interaction and management. It is the duty of the pharmacist to keep themselves up to date evaluate and manage it specially now a day and counselling properly to the patients.

Now firstly the first goal of present study is generally be aware the percentage of interacted prescription in the city of Karachi. The result of the first objective is about 28% interaction have been found which is much more higher as compare to the other developed countries where the interaction range is about 4-5 % .Karachi called the one of the most literate cities in Pakistan having literacy rate along with the gross enrolment ratio if 111%.

If compare the Karachi to other Rural areas the Graph and Ratios regarding Drug Interaction is quite high. Drug interaction is very challenging in this computerized world. In this study, the incidence of drug interaction was highest among primigravidae. On July 2011, 28% of the study population were interacted. In Jan 1998 study major poly pharmacies have greater adverse effects so my study is to evaluate poly prescription in generalized, evaluation and its management. In this study the patient who are receiving two or more than two drug were about (98% in private and Government 80%), interaction were evaluated i.e. interacted and non-interacted .For this study we collected 250 random prescription in primary, secondary, tertiary care hospital and cover every area of Karachi Pakistan .The tool we develop for the study is a questionnaire, oral survey and patient prescriptions. According to my study people have lack of knowledge even they even not heard the name of the Pharmacist. They people was not knew about drug interaction, even not know where, when and how to approach the pharmacist. We found in our study that physician were not accepted Pharmacist and not want that Pharmacist part in any medical affairs. The significance level of prescription is characterized in Minor, Moderate and Major and the percentages are 14.8%, 13.6% and 4%.

The drug Interaction identifying factors is DIPs Checker system and Surface Area. Now a day the most frequent is Interaction checker which is directly connected to the Internet. Basically it is done by the Pharmacist but the avalibility of the Pharmacist in our society is a specific place is very low. Due to the various issues the Physician are not keen views on the prescription. Although during the study some physician were refused to participate and neglect the significance if any reported and occurs.

The Mirror difference between the developed and under developed countries where the importance of the Pharmacist have been recognized .In the recent scenario, large number of medications are being marketed and along with the new interaction also mentioned. As a result it does not requisite for Physician in the direction of transmit on reminiscence unaccompanied to keep away from the potiential Drug Interaction. The Multiple drug course of

therapy or the poly prescriptional disciple carry the risk of adverse interaction .The Participating drug sometime create interaction with the assimilation, allocation ,the basal metabolism and elimination or excretion and sometime the object drug create the influences upon it as the Naranjo Nomogram Scale have designed. If we focused the eye about the primary health care the frequent drug prescriber are NSAIDs, Antibiotics etc while the drug have Narrow therapeutic Index and have Serious Drug Interaction like Warfarin, Fluoroquinolones, chemotherapeutic agents, Antiepileptic agents etc. Identifying Medicinal communication is a everyday confront for family physician as well as every bit of potiential interaction has become virtually impossible. Some Pharmacies have drug Interaction Soft ware programme and some of the pharmacies and Pharmacist follow it. By means of numerous of potiential medicinal Interaction, it is subsequently to impracticable to keep in mind all. Among the increasing Poly prescribing trend the pharmacy workstation programme i.e. the different software program offers and recognize the mainstream of potiential drug Interaction nevertheless systems are excellent otherwise the person are quite capable and qualified and after evaluation the DIPs method managed it.

In this Cross Sectional study the percentage of interacted prescription were about 28% here the female gender are more susceptible .According to this study there is no special demarcation between the Male and Female patient Interaction i.e. no specific reason. In the third objective the total number of level of significance is 38,34and 10 respectively and from them10% patients near to the death beds and it can easily be preventable and avoidable.

According to the next objective i.e. the systematic pharmacological aspects in which the cardiovascular interaction was largest about 25.2 % cumulatively because in cardiovascular diseases the prescriptions have lots of medication in a single time, which is more prone or more susceptible for interaction. For this objective it has been evaluated that the poly prescriptions have more chances for interaction as compare to others.
In the Cardiovascular diseases the Hypertension have large number of interaction as compare to the other diseases which is related to cardiovascular. After assessing the knowledge awareness regarding drug Interaction the people have poor awareness about the job descriptions and responsibilities of the pharmacist i.e. 40%.The benefit for prescriber and patient is about 61% and 39%.

Prevention is much better than cure. If the Pharmacist fulfil their responsibilities so the drug Interaction can be avoidable and the poly prescription practice can be minimized either it can be agonist, antagonist, synergistic, additives etc.

In the present situation of Karachi, Pakistan the open statement is "Hit and trial for cure "could be applied here.28% interaction have seemed here in Pakistan However in global world the rate is 3-4% and the role of the pharmacist is recognized and well impleminded,because of the lacking in our system problem have raised. Mostly interactions have been seemed in cardiovascular and the significance level is quite high. If the Pharmacist importance well accepted, participated in treatment, evaluation so the management rate is quite low.70% 0f the people have no knowledge,15% of   patient known and accept the value and importance but the no of pharmacist is low in hospital according to the study.75%people have clearly said if document provide they people will follow it.

At hospital level drug dispensing utilization, CMEs on rational use for medical and non-medical personals .We have to make aware the society to make aware the society to evaluate the prescription and manage it. Cure yourself not being the victim of it.

CONCLUSION

The result that have been evaluated clearly shows the pattern of prescribing practices f the General Practitioners of different Private or Public Hospital, Clinics in Karachi. Accumulative result shows that there are 28% interaction Drug-drug interaction, if focused on other interaction type such as herb and food etc surely have find out the interaction and can correct just by different conversation tools. In the opinion of other healthcare professionals like Pharmacist are alarming. The mortality rate of their interaction could not evaluate due to the patient non-compliance. Only Drug interaction in poly prescription in the above mention rate is shocking and need to address by giving a proper knowledge to the General practitioners or to advice them to be in touch this latest development in the field of medicine. Table and Graphical information shows that the citizens of Karachi are not taking the proper medication in case of different element and need to be address by the Government levels and other steps and minimize to eradicate this interaction or to minimize the Percentage of interaction to an appropriate level for reducing the mortality rate.

Table 1: To evaluate the prescriptions, interacted and non-interacted

#	Appropriate #	250
	Absent	0
	X(Mean)	1.7200
$SE_{\bar{x}} = \dfrac{s}{\sqrt{n}}$		0.02845
$\tilde{x}$ (Median)		2.0000
Mo(Mode)		2.00
STD(Standard Deviation)		0.44990
σ^2(Variance)		0.202
R(Range)		1.00
"Minimum"		1.00
"Maximum"		2.00
$\sum$(Total)		430.00

Table 2: To evaluate the prescriptions, interacted and non-interacted.

		Frequency
Valid	Interacted	70
	Non-interacted	180
	Total	250

Table 3: To identify the gender, susceptible for interaction

#	V	70
	absent	180
	X(Mean)	1.6286
$\tilde{x}$ (Median)		2.0000
Mo.(Mode)		2.00
STD.(Standard Deviation)		0.48668
R.(Range)		1.00
$\sum$(Total)		114.00

Table 4: To identify the gender, susceptible for interaction

		f	%	V. %	Cumulative relative f
Valid	♂(Male)	26	10.4	37.1	37.1
	♀9Fe-	44	17.6	62.9	100.0
	$\sum$	70	28.0	100.0	
Absent	System	180	72.0		
	$\sum$	250	100.0		

Table 5: To document the significance level of interacted Prescription

		f	%	V. %	Cumulative Relative f.
V.	Minor	37	14.8	45.7	45.7
	Moderate	34	13.6	42.0	87.7
	Major	10	4.0	12.3	100.0
	∑	81	32.4	100.0	
Absent	System	169	67.6		
	∑	250	100.0		

Table 6: To evaluate the systematic pharmacological aspects of Prescriptions

#	V.	115
	Absent	135
	∑	5.7478
$SE_{\bar{x}} = \dfrac{s}{\sqrt{n}}$		.40756
	$\tilde{x}$ (Median)	5.0000
	Mo)(Mode)	1.00
STD(Standard Deviation)		4.37064
	σ^2(Variance)	19.103
	R(Range)	14.00
	"Minimum"	1.00
	"Maximum"	15.00
	∑(Total)	661.00

Table 7: To evaluate the systematic pharmacological aspects of Prescriptions

		f	%	V. f	Cumulative Relative f.
V.	Cardiovascular	29	11.6	25.2	25.2
	nervous system	15	6.0	13.0	38.3
	Anti-cancer	3	1.2	2.6	40.9
	Anti-cogulant	2	.8	1.7	42.6
	Anti-diabetics	15	6.0	13.0	55.7
	Endocrine	9	3.6	7.8	63.5
	Analgesic	2	.8	1.7	65.2
	Musculoskelaton drugs	6	2.4	5.2	70.4
	Drug to treat infection	8	3.2	7.0	77.4
	GIT	14	5.6	12.2	89.6
	Respiratory diseases	5	2.0	4.3	93.9
	Metabolic drugs	2	.8	1.7	95.7
	Obstetrics	1	.4	.9	96.5
	Urology	4	1.6	3.5	100.0
	∑	115	46.0	100.0	
Absent	System	135	54.0		
	∑	250	100.0		

Figure 8: To document the most repetitive cardiovascular disease in interacted
Evaluated prescriptions

		f	%	V. %	Cumulative Relative f
V.	Hypertension	9	3.6	28.1	28.1
	Heart Failure	2	.8	6.3	34.4
	Carotid artery stenosis	1	.4	3.1	37.5
	MI	3	1.2	9.4	46.9
	Congestive Heart Failure	3	1.2	9.4	56.3
	Coronary diseases	2	.8	6.3	62.5
	Thrombotic disorder	2	.8	6.3	68.8
	Cerebrovascular accident	1	.4	3.1	71.9
	Arrthymias	3	1.2	9.4	81.3
	Angina	5	2.0	15.6	96.9
	Stroke	1	.4	3.1	100.0
	Total	32	12.8	100.0	
Absent	System	218	87.2		
	∑	250	100.0		

Table 9: To assess the knowledge and awareness, regarding interaction

		f	%	V.%	Cumulative Relative f.
V.	poor	40	16.0	40.0	40.0
	Average	38	15.2	38.0	78.0
	good	14	5.6	14.0	92.0
	Excellent	8	3.2	8.0	100.0
	Total	100	40.0	100.0	
Absent	System	150	60.0		
	∑	250	100.0		

Table 10: To document the benefits for prescriber and patients

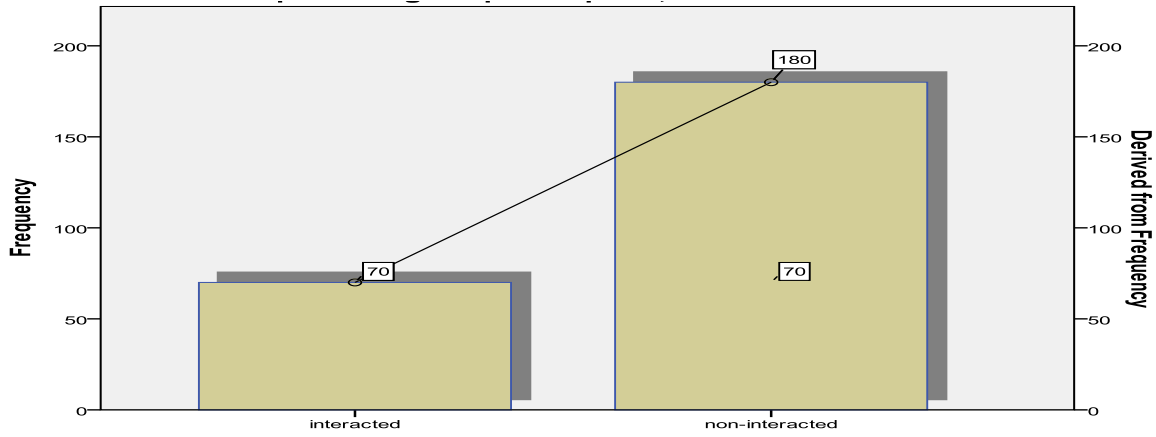|		f	%	V. %	Cumulative relative f.
V.	Benefit	61	24.4	61.0	61.0
	No Benefit	39	15.6	39.0	100.0
	Total	100	40.0	100.0	
Absent	System	150	60.0		

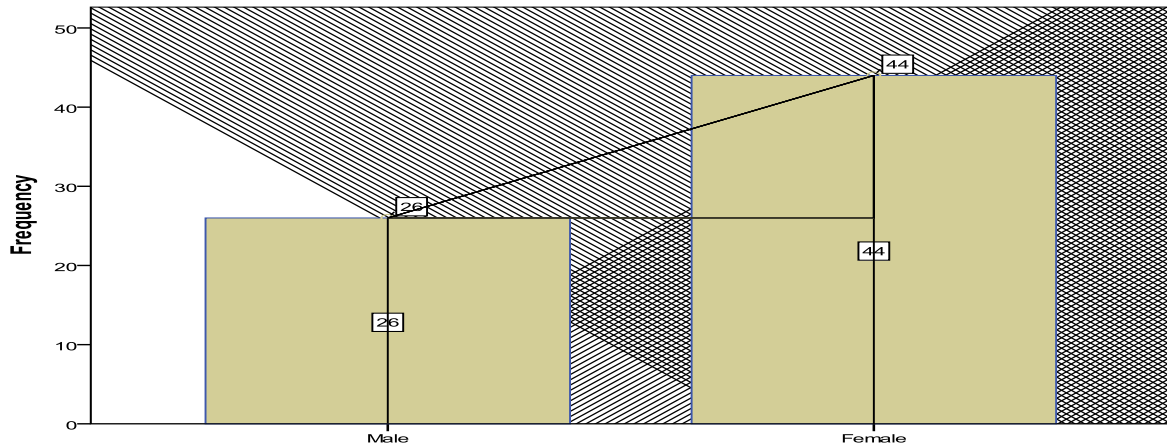Figure 1: To evaluate the prescriptions, interacted and non-interacted

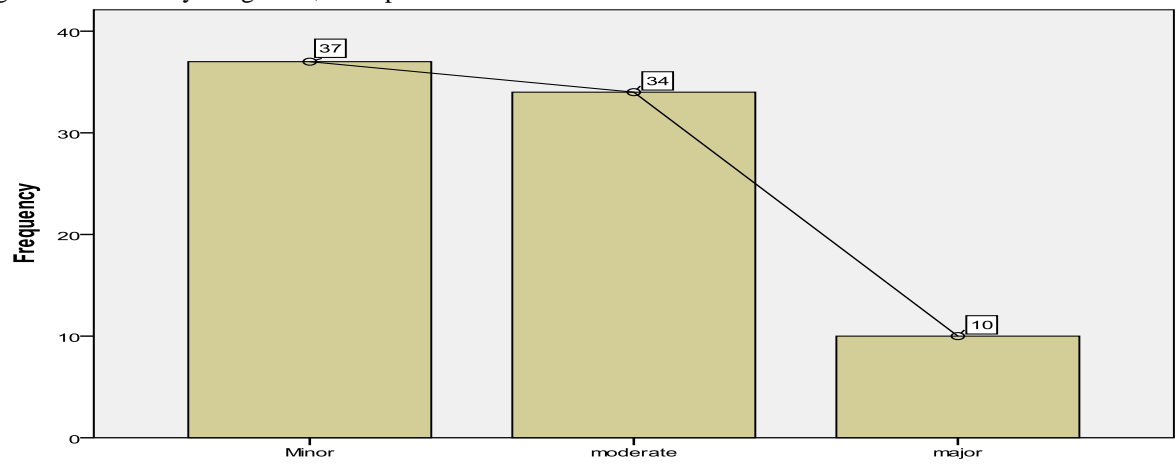Figure 2: To identify the gender, susceptible for interaction

Figure 3: To document the significance level of interacted Prescription
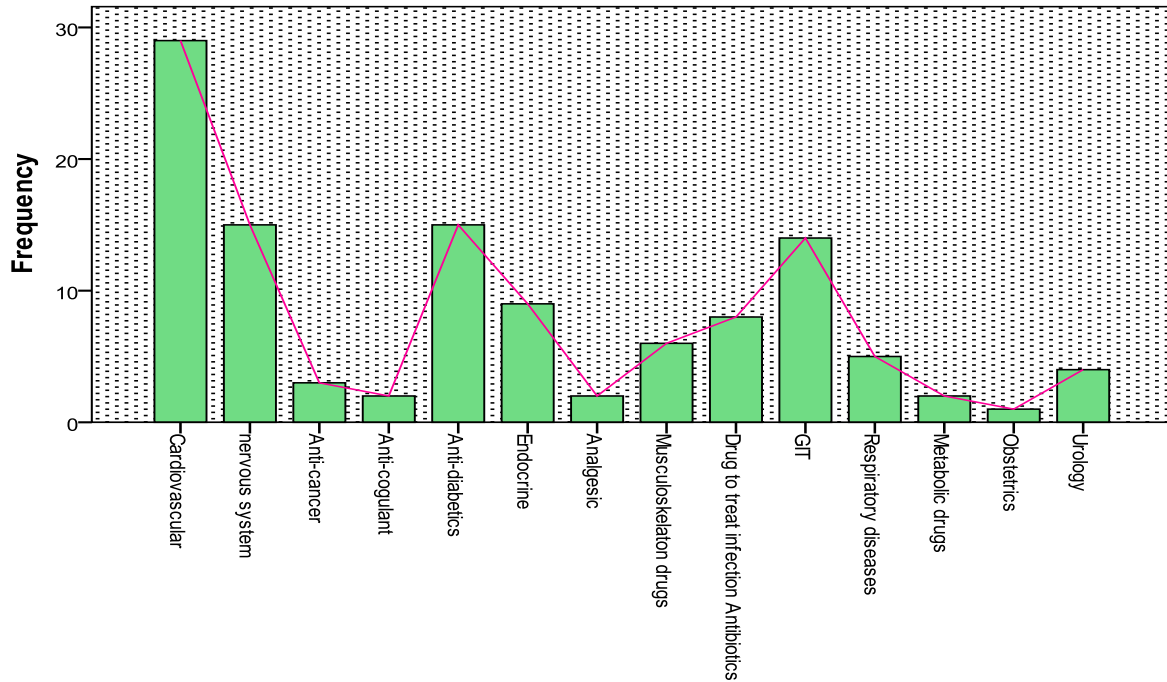
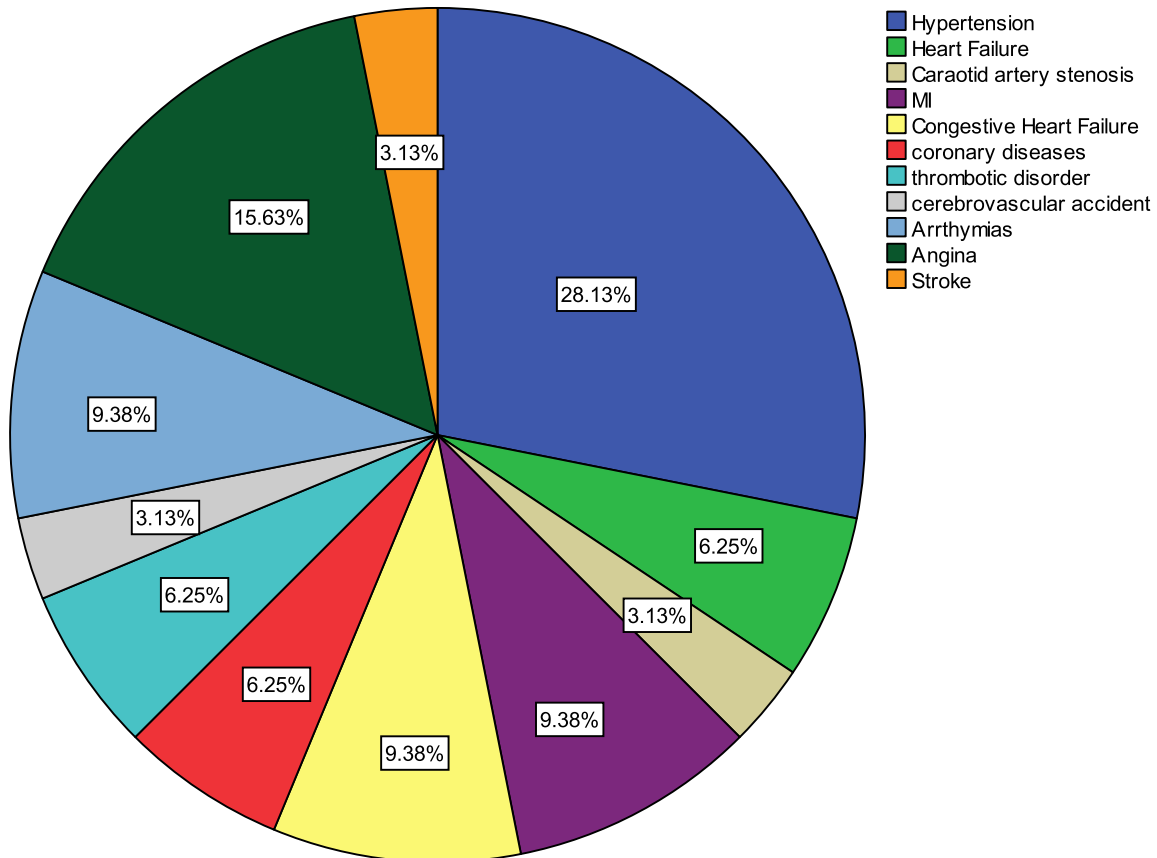Figure 4: To evaluate the systematic pharmacological aspects of Prescriptions

Figure 5: To document the most repetitive cardiovascular disease in interacted Evaluated prescriptions

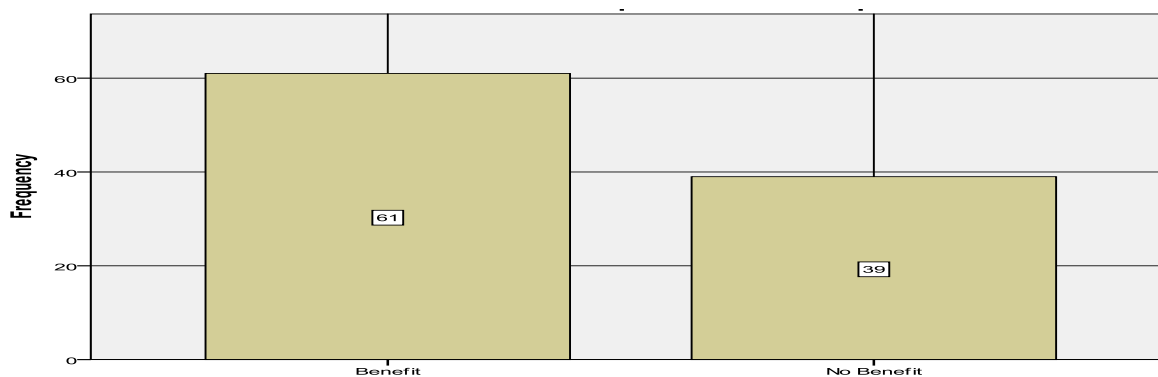Figure 6: To assess the knowledge and awareness, regarding interaction

Figure 7: To document the benefits for prescriber and patients

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