P-0782 Drug related Problems in Type-2 Diabetes patients in geriatric patients of South India: Using PCNE classification tool.

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Background:

Drug-related problems (DRPs) lead to substantial morbidity and mortality and are statistically related to the clinical outcomes, healthcare costs, and quality of life of diabetic patients. Patients with Type-2 diabetes mellitus (T2DM) are known to be at risk of drug related problems since they often receive multiple medications due to co-morbidities associated with the condition. This study assessed the prevalence of drug related problems and related factors in a geriatric population of diabetic patients using PCNE classification tool in a tertiary hospital of south India.

Methods:

A prospective analysis of selected geriatric patients of Type 2 diabetic was conducted from January 2016 to January 2017 in the Medicine ward of Rajah Muthiah Medical College and Hospital, Annamalai University. Data was collected and analyzed for demographics, clinical conditions (co-morbidity), types of medications used and medication complications. All collected data were scrutinized with the SPSS version 20 for data management and analyzes in the study. The Chi-square test was used for determination of the significant relationship between types of medications prescribed for geriatric patients and factors associated with the occurrence of DRPs. The P-value <0.05 was considered statistically significant

RESULTS AND DISCUSSION:

A total of 520 Type-2 diabetic geriatric cases were collected from the Rajah Muthiah Medical College and Hospital. In our total study population 342(65.76%) cases were males and 178(34.23%) were females. Out of 520 patients, total numbers of 782 DRP were identified among 481 geriatric patients. The DRP were identified that according with their definition. There was an average of 1.62 problems per patients. The results demonstrated that in 93.27% (n=319) of males and 91.01% (n=162) of females DRPs were recognized. While the occurrence of DRP in male patients was moderately high, this could be due to the fact that a high number of males stayed the hospital in that exacting time.

Table 1: The drug related problems on PCNE Classification

Drug Related Problems	Number of problems	Percentage (%)
Adverse drug reaction	97	12.40
Drug choice problem	264	33.75
Dosing problem	20	2.55
Drug use problem	69	8.82
Drug interaction	332	42.45
Total	782	100

782 DRPs were examined in this study and the common of the issues were associated to drug interaction of drugs (42.45%; n=332), followed by 33.75 % (n=264) drug choice problem, 12.40 %; (n=97) adverse drug reaction, 8.82%; n=69 drug use problem and 2.55%; n=20 dosing problem is shown Table-1. More number of drugs was prescribed for geriatric patients for their multiple diseases, this

Table 2: Factors association with DRP (n=481)

Character s	No of patient	DRP		Chi-square	P*-value
		Yes	No		
Gender					
Male	342	319	23	0.8647	0.3524
Female	178	162	16		
Polypharmacy					
Yes	459	451	8	186.933	0
No	61	30	31		
Hospital stay					
≤7 days	178	174	4	10.7641	0.00103
>7 days	342	307	35		

89.76% DRP patients were stayed more than one week in the hospital. Hospital stay is significant at p<0.05 with DRP (p=0.001).

Table 3: Causes of drug related problems

Primary Domain	Code V6.2	Causes of Drug Related Problems	No of Causes	Total	(%)
1. Drug Selection	C1.1	Inappropriate drug (Beer's criteria)	242	264	45.36
	C1.2	No indication for drug	5		
	C1.3	Inappropriate combination of drug	4		
	C1.4	Drug duplication	4		
	C1.5	Multiple drugs for indication	3		
	C1.6	More cost effective drugs	4		
	C1.7	Preventive drugs not given	2		
2. Drug Form	C2.1	Inappropriate drug form	3	3	0.51
3. Dose Selection	C3.1	Drug dose too low	4	20	3.43
	C3.2	Drug dose too high	6		
	C3.3	Dosage regimen not frequent enough	3		
	C3.4	Dosage regimen too frequent	4		
	C3.5	No therapeutic monitoring	2		
	C3.6	Pharmacokinetic problem requiring dose adjustment	1		
4. Drug Use Processes	C5.1	Inappropriate dosing interval	37	69	11.85
	C5.2	Drug underused	5		
	C5.3	Drug overused	4		
	C5.4	Drug not taken/ administrated at all	14		
	C5.5	Wrong drug taken/ administrated	3		
	C5.6	Drug abused	2		
	C5.7	Patient unable to take prescribed dosage form	4		
5. Logistics	C6.1	Prescribed drug not available	3	11	1.89
	C6.2	Prescribing error(necessary information Missing)	6		
	C6.3	Dispensing error(wrong drug or dose dispensed)	2		
6. Patient	C7.1	Missed dose(patients forget to use/take drug)	213	215	36.94
	C7.2	Unnecessary use of drug	3		

The widely held of the causes were created by drug selection (45.36%), followed by patients (36.94%), Drug use process (11.85%), Dose selection (3.43%), Logistics (1.89%) and Drug form (0.51%). The outcomes from this study exposed that "drug selection" was the majority often recognized the cause for DRPs such as drug choice problems, drug interactions. The DRPs, of causes is directly associated to the dosage selection.

Table 4: interventions for drug-related problems

domain	V6.2	intervention	intervention	Total	(%)
	I0.0	No intervention	0	0	0
1. At prescriber level	I1.1	Prescriber informed only	41	149	25.60
	I1.2	Prescriber asked for information	4		
	I1.3	Intervention proposed, approved by prescriber	89		
	I1.4	Intervention proposed not approved by prescriber	13		
	I1.5	Intervention, outcome known	2		
2. At patient/ Carrere level	I2.1	Patient (medication) counseling	301	386	66.32
	I2.2	Written information provided only	6		
	I2.3	Referred to prescriber	3		
	I2.4	Spoken to family member/Carrere	76		
3. At drug level	I3.1	Drug change to	11	41	7.04
	I3.2	Dosage change to	6		
	I3.3	Formulation change to	4		
	I3.4	Instruction of use changed to	7		
	I3.5	Drug stopped	12		
4. Others	I3.6	New drug started	1	6	1.03
	I4.1	Other intervention	2		
	I4.2	Side effects reported to authorities	4		

Table 5: Outcomes of interventions

Primary Domain	V6.2	Outcomes	solved	Total	(%)
0. Not known	O0.0	Outcome intervention not known	16	16	2.79
1. Solved	O1.0	Problem totally solved	509	509	87.45
2. Partially solved	O2.0	Problem Partially solved	3	3	0.51
3. Not solved	O3.1	Not Solved lack of cooperation of pt	32	54	9.27
	O3.2	Lack of Cooperation of Prescriber	9		
	O3.3	Intervention not effective	11		
	O3.4	No need or possibility to solve problem	2		

Conclusion: Outcomes of interventions indicate that almost 87.45% of problems are totally solved, by pharmacist's interventions; it is expanding proof that support of clinical pharmacists in geriatric health care have a positive influence on clinical outcomes. findings suggest significant incidence of DRPs in the health facility indicating the need for comprehensive medication management approach which requires the use of pharmacists to play more active roles in managing patients with diabetes.