

RESEARCH ARTICLE

A Cross-Sectional Prescription Audit Database for Anti-Anginal Drugs with Impact of Essential Drug List and Standard Treatment Guidelines on Prescription Pattern in Nasik City

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ABSTRACT:

The pharmacy department supply database was used to generate a summary report of volume of each anti-anginal supplied. This report with prescription audit database was used to determine the relative usage of each anti-anginal by hospitals. Two hospitals were selected and 300 consecutive anti-anginal prescriptions were recorded, analyzed. The interventional study carried out as first audit for 150 prescriptions and after given instruction to clinicians for improvement in quality of prescription writing and rationality the next 150 prescription were collected as second audit. Supply audit database at selected hospitals suggested that Nitrates, B-blockers, and Ca⁺⁺ channel blockers were primary line anti-anginal drugs with relative proportional usage from supply data was 29.03%, 58.06%, 12.09% and of prescription audit data was 69.08%, 27.73%, 9.18% respectively. In first audit superscription 86.04%, inscription 54.03% subscription 1.33%, transcription 28.66%, extra point 46.33%, rationality 0.00% were present. The significant improvement as compared to first in second audit was 8.27%, 28.67%, 60.67%, 35.78%, and 14% for superscription, inscription, subscription, transcription, extra point and rationality status respectively. Out of 300 prescriptions 279 prescriptions (93.00%) were irrational based on the use of essential drug WHO and standard treatment guidelines and 207 prescriptions (74.19%) had Aspirin as concomitant drug.

The study result demonstrates that supply data is not an accurate reflection of drug usage particularly in case for drug with multiple indication use like B-blockers. Furthermore, supply data is useful in identifying prescribing trends that can be quantified by prescription audit. The significant improvement has been observed in quality of completeness, legibility rationality after giving training and instructions to clinicians.

KEYWORDS: Prescription audit, Intervention, Essential drug, Rationality, Supply databases.

INTRODUCTION:

Audit is survey that measure the quantities of supply by estimating actual from provided which analyses drug movement from pharmacy to services measure broad movement of pharmaceutical product out of pharmacies and into hand of patient. Excluding error in decision making, the remaining is mainly due to order ambiguity non standard nomenclature and writing illegibility⁽⁶⁾. The use of multiple medications is a serious problem in current health care system. The US General Accounting Office (USGAO) reports significant morbidity and mortality associated with improper poly-pharmacy. Patients are exposing to multiple treatment often involving potentially harmful drugs. Many prescribed drugs are part of treatment that has originally been initiated by medicinal practitioners.

Commercial sources of information are known to have greater influence than scientific sources on general practitioners prescribing behavior in under developed and developing countries⁽⁸⁾. Prescriptions for these drugs are often continued without knowledge about prevalence or potential hazards of poly-pharmacy. The number of drugs marketed are substantial of super specialization of clinicians is increasing. Consequently, clinician's knowledge of clinical experience with prescribed drugs is declining⁽⁴⁾. Potential drug related problem for patients are therefore a cause of international concern.

Drug related problems are classified into two categories Medication Errors (MEs) and Adverse Drug Effects (ADEs). MEs occur at five levels:-selection, prescribing, dispensing, administration and therapeutic monitoring. ADEs includes un-intended clinical effect after administration. Drug related problem can result in decreased quality of life morbidity or mortality. Prevention is thus important. Physicians are responsible for preventing MEs in drug selections of for dealing with ADEs. Pharmacists are responsible for dispensing and therapeutic

monitoring. Prescribing and administration are joint responsibilities⁽⁴⁾.

Cardiovascular Disease (CVD) is common, frequently fatal, and largely preventable condition which has been highlighted New National Services Framework (NNSF). Stable angina is a major health problem that affects over 7 million adult men and women in the United States, with an estimated 350,000 cases annually⁽⁵⁾. Symptomatic therapy is targeted at either reducing oxygen demand by decreasing the work of the heart or increasing oxygen supply by dilating coronary arteries. Acute treatment of an angina episode consists of rest and often sublingual nitro-glycerine⁽²⁾. Chronic treatment to prevent symptoms has consisted of one or a combination of beta-blockers, calcium antagonists, and long-acting nitrates⁽²⁾.

Now days there is an exponential growth in the availability of various drugs for CVD their impact result in complicated treatment, long-term treatment leads to various Adverse Drug Event (ADE), various risk and benefit of competing therapies. The patients experiencing Adverse Drug Reactions (ADRs) were more likely to be older taking a larger number of medicines, and had a longer length of stay than those without ADRs⁽³⁾. So, there is need to support the medicinal practitioner to aware about standard treatment guidelines for CVD so as to avoid the poly-pharmacy, promoting the unnecessary drugs of related ADR and ADE. The aim of this study is to evaluate whether evidence based anti-anginal pectoris treatment aid for patient with known cause of angina can improve the appropriateness of anti-anginal therapy by using prescription audit data and supply data.

METHODOLOGY:

A cross sectional study was carried out in the tertiary care hospital and private cardiology hospital in Nasik city for three months period. The Institutional Ethical Committee (IEC) approval was received before initiation of study. The study was conducted in compliance with Schedule -Y and Indian Council of Medical Research (ICMR) regulatory guidelines of India. The pharmacy department supply database was used to generate a summary report of volume of each anti-anginal supplied to study center over three months. This summary report of anti-anginal drug use from supply database was compare with proportional anti-anginal drug use from prescription audit database which was used to identify trends, and relative use of anti-anginal drugs.

The prescription audit was conducted at study centre. 300 OPD and IPD unit consecutive anti-anginal prescriptions were recorded and analyzed. Before collecting the data an informed consent was taken from each patient after screening as per study selection criteria to note down the drugs prescribed. The names of the patients and prescribing doctors were kept confidential throughout the study. The prevalence interventional study carried out in two parts as first audit for 150 prescriptions and second audit after giving instructions and verbal suggestions to respective prescribers for improvement in quality of prescription

writing and rationality status by collecting the next 150 prescriptions were carried out.

All prescriptions were analyzed by tabulating data in following prescription analysis sheet. In which each prescription had assessed for 24 elements in 6 different categories. Each element has maximum 2 points and minimum 0 point. 2 points indicates- full and adequate information. 1 point indicates- inadequate information. 0 point indicates- no information. The cross -sectional comparative analysis of both prescription audit data was done by applying Z-test for two mean at , P=0.05 level of significance and critical value $Z_{0.05} = 1.96$ to calculate significant statistical difference.

Prescription Analysis Sheet

PARTS OF PRESCRIPTION	POINTS (0/1/2)	COMMENTS
1) SUPERSSCRIPTION		
1. Name and Address of Doctor/ Hospital		
2. Name of Patient.		
3. Date		
4. Sex		
5. Age		
6. Diagnosis (Final or Provisional)		
7. Prefix Rx		
Total (14)		
2) INSCRIPTION		
1. Basic active drugs		
2. Adjuvant Drug		
3. Drug used when not indicated (over-prescribing)		
4. Drug not used when indicated (under prescribing)		
5. Dose proper		
6. Route (Safety and convenience)		
7. Frequency		
8. Duration		
9. Proper Sequence		
10. Proper combination of drug		
Total (20)		
3) SUBSCRIPTION		
1. Direction to pharmacist		
Total (2)		
4) TRANSCRIPTION		
1. Doctor's name and Signature		
2. Registration number		
(Total 4)		
5) EXTRA POINTS		
1. Legibility of prescription		
2. Whether or not explained in local language		
3. Follow up visit		
Total (6)		
6) RATIONLITY		
Total (2)		

RESULT:

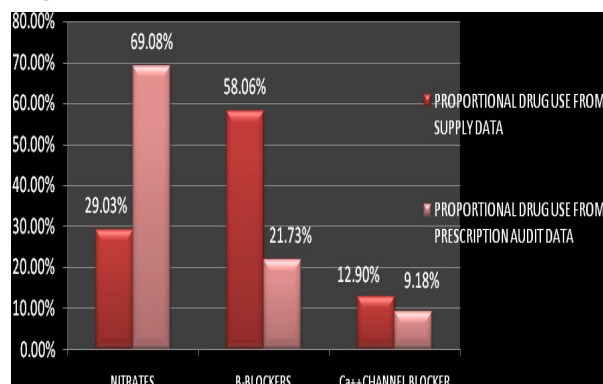
Supply data and prescription data analysis demonstrated that Nitrates and B-blockers were the primary line of drugs for Angina Pectoris and Ca⁺⁺ channel blockers was used in case of long-term therapy. If prescribers complied with WHO Essential Drug List the usage pattern would have been as Nitrates, B-blockers and Ca⁺⁺ channel blockers.

Table No.1:- Analysis of proportional relative anti-anginal drug use

Sr. No.	ANTIANGINAL DRUGS	DRUG USE FROM SUPPLY DATA		DRUG USE FROM PRESCRIPTION AUDIT DATA	
		Strips/10tab.	Proportional use	Strips/10tab.	Proportional use
1.	Nitrates	900	29.03%	820	69.08%
2.	B-blockers	1800	58.06%	258	21.73%
3.	Ca ⁺⁺ channel blockers	400	12.90%	109	9.18%
4.	Total	3100	99.99%	1187	99.99%

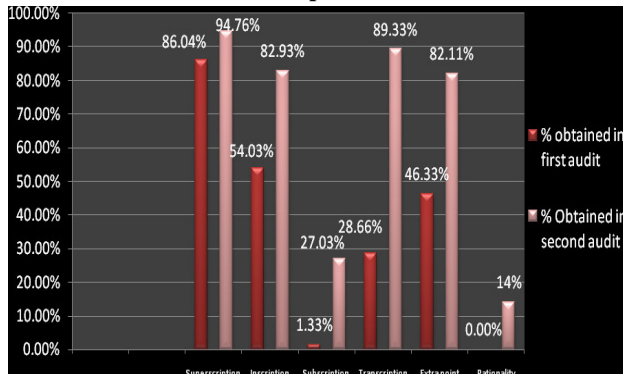
Prescription audit over selected hospitals suggested that clinicians prescribes Nitrates, B-Blockers, Ca⁺⁺channel blockers. Table No.1 shows drug use from supply data and prescription audit database calculated in form of proportional use. The significant difference is marked out in case of drug with multiple indication as supply database proportional use of B-blockers is 58.06% and 12.90% for Ca⁺⁺blockers but the prescription database proportional use is 21.73% for B-blockers and 09.18% for Ca⁺⁺channel blockers (Graph No. 1).

Graph no.1:- Comparison of proportion of anti-anginal drug use

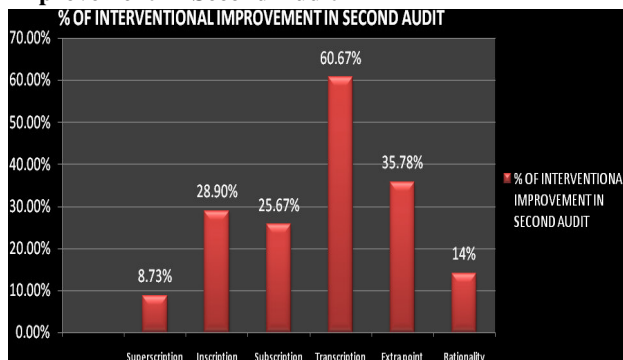


Out of 150 first audit prescription database all 150 prescription was found to be irrational along with numbers of writing error with poor legibility. In case of first audit-superscription was found to be 86.04%.The inscription, subscription, transcription and extra point was found to be 54.03%, 01.33%, 28.66%, 46.33% respectively (Graph No. 2). In case of second audit we were found 14% improvement in rationality status. The superscription was noted 94.76%. The other parts of prescription inscription, subscription, transcription and extra point were found to be 82.93%, 27.00%, 89.33%, 82.11%. The significant improvement was noticed to after giving instruction and training to clinicians. The intervention result as 8.72%, improvement in superscription in second audit.28.6%, 60.67%, 35.78%, 14% improvement in inscription, subscription, transcription, extra points and rationality in second audit (Table No. 2, Graph No. 3). Audit of prescription pattern for assessment of writing error and rationality revealed that most of prescription was irrationality and did not confirm to ideal pattern of prescription writing but there were significant improvement in prescription writing and rationality status after giving instruction and training to respective authority and clinicians.

Graph No.2:- Comparison of Percentage (%) Obtained Of First and Second Prescription Audit



Graph No.3:- Percentage (%) of Interventional Improvement In Second Audit



Statistical Calculation:

Calculated Mean (\bar{x}_1) for first prescription audit is 670.16 and S.D. (σ_1) is 1785.17% and for second prescription audit Mean (\bar{x}_2) is 979.33 where S.D. (σ_2) is 934.29%.The S.E. ($\bar{x}_1 - \bar{x}_2$) is 822.58, so by applying Z-test. For two mean calculated Z-values was 0.3758 at p=0.05 level of significance. We can say, calculated Z=0.3758 < critical value $Z_{\alpha} = 1.96$.So, Null hypothesis (H_0 : Clinician will improve in quality of prescription writing and rationality pattern for anti-anginal drug after receiving instruction and ongoing development for treatment of Angina pectoris of various ADR and drug toxicity.)is accepted V_s alternative hypothesis (H_1 : Clinician will not improve in quality of prescription writing and rationality pattern for anti-anginal drug after receiving instruction and ongoing development for treatment of Angina pectoris of various ADR and drug toxicity.)

Table No.2:- Result of analysis of first audit and second audit

Sr. No	Part of prescription	First audit		%	Second Audit		%	%
		Total points	Audit points	Obtained	Total point	Audit points	Obtained	Improvement
1	Superscription	2100	1807	86.04%	2100	1990	94.76%	8.729%
2	Inscription	3000	1621	54.03%	3000	2488	82.93%	28.90%
3	Subscription	300	04	01.33%	300	81	27.03%	25.67%
4	Transcription	600	172	28.66%	600	536	89.33%	60.67%
5	Extra point	900	417	46.33%	900	739	82.11%	35.78%
6	Rationality	300	00	00.00%	300	42	14%	14%

DISCUSSION:

The study results suggested that the prescription audit database is superior method of data collection⁽⁷⁾ over supply database to identify relative usage of drugs but the supply database demonstrated that nitrates and B-blocker were primary line drugs and the Ca⁺⁺ channel blocker were used in case of long-term therapy of Angina Pectoris (AP). The study highlights the rationality status for anti-anginal drugs in study center were irrational⁽⁹⁾⁽¹⁰⁾, almost 279 prescription (93%) form all over 300 prescriptions were irrational only 14% of improvement has to be obtained although providing the ongoing development of treatment of AP and various ADR and drug toxicity. Out of 279 (93%) irrational prescriptions 207(74.19%) of prescriptions contains Aspirin as concomitant drug. Aspirin is an anti-platelet and anti-inflammatory agent in unstable angina. Most of patients are to be prescribed with low dose Aspirin therapy for secondary CVD prevention⁽²⁾. So, our study suggest the regulatory agencies should update, revised their Essential Drug List (EDL) and standard treatment guideline for improving health status and service to overcome the morbidity proportion due to various CVD complication, over worldwide.

Our study focused attention on formal characteristics of prescription writing. In fact 1 to 4 prescription points were not fully completed or were illegible⁽¹⁾. The result obtained after first audit of prescription revealed that most of prescription did not confirm to ideal pattern of typical prescription writing format and rationality status. Most of prescription were devoid of Age, Sex, R_x, Registration No., Signature, Legibility is a matter of concerns as most problems arises from distortion error due to spelling and clarity legibility was not proper. It was found in first audit almost 28.33% of prescriptions were lack of transcription for subscription the reported figure was only to 01.33%. All over, the instruction about writing format and formal characteristics and problems occurring due to poor legibility with ongoing development of treatment for angina and various ADR and drug toxicity, there was drastic improvement seen. The 60.67% of improvement was found for transcription in second audit which was highest improvement in all cases.

This study evaluated prescription audit database accurate reflection to identify the drug usage over the supply database.⁽⁷⁾ The prescription practices this region of country have been so far from satisfactory, with rational drug therapy being made use of 1/4th case only⁽⁹⁾⁽¹⁰⁾. Hence, there is need of prescription writing, rationality pattern and

ultimately prevent the consequences of prescription audit. Other hand the pertinence of orienting health care provider at all levels towards rational drug use and healthy prescribing practices is beyond dubiety.

CONCLUSION:

The study result demonstrates that supply data is not an accurate reflection of drug usage as compared to prescription database particularly in case for drug with multiple indication use like B-blockers. Furthermore, supply data is useful in identifying prescribing trends that can be quantified by prescription audit. The significant improvement has been assessed in quality of completeness, legibility and rationality after giving training and instruction to respective authority and doctors.

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