Polypharmacy and Prescription Patterns of General Practitioners in Major Cities of Sindh

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ABSTRACT

Objective: To analyze polypharmacy and prescription patterns of general practitioners in major cities of Sindh.

Study Design: Descriptive cross sectional study

Place and Duration of Study: This study was conducted at the Major cities (Karachi, Sukkur, Tando Muhammad Khan and Tando Adam) of Sindh from January 2021 to June 2021 for a period of six months.

Materials and Methods: An online database system was developed for simultaneous data entry by the authors from different cities of Sindh. Total 7590 prescriptions were collected within six months. Polypharmacy (PP) was defined as use of 5–8 drugs, excessive polypharmacy (EPP) use of > 8 drugs and non –polypharmacy (NP) ≤ 4 drugs concomitantly. The data was analyzed SPSS for Windows ver. 22 (Chicago, IL, USA). Data was presented as frequency and % for categorical variables. The Microsoft Excel sheet was employed for graphing. Chi – square testing was used for categorical variables. Level of significance was taken at ≤0.05.

Results: Polypharmacy and Excessive polypharmacy and Non –polypharmacy were observed in 4653 (61.3%), 1978 (26.1%) and 959 (12.6%) respectively (P=0.0001). Proton pump inhibitors were most frequently prescribed drugs 7103 (93.5%), followed by calcium and vitamin D supplements 6987 (92.1%), steroids 6705 (88.3%), multivitamin and multi-mineral pills 6619 (87.01%).

Conclusion: The present study reports the polypharmacy and excessive polypharmacy are prevalent in the country and highlight the need to revise medical practice and drug dispensing policy in the country.

Key Words: Polypharmacy, Prescription, Drugs, Sindh

INTRODUCTION

Polypharmacy term was coined about one – and a half century back that refers to poly pill drug consumption with associated risk and complications. It encompasses "unnecessary drug use" and medicaments use without indication. It has been used under different meanings according to the different clinical conditions. In one opinion, use of five or more drugs in a single prescription may be called as Polypharmacy.[1,2]

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It is very difficult to define Polypharmacy as the consensus is lacking because of mild to severe clinical disease status. The WHO suggests the numerical definition may not be reliable, but emphasis should be on the evidence based adverse drug reactions and main goal should least drug number at the maximum. WHO defines Polypharmacy as the administration of multiple numbers of drugs at the same time.[3] Simple defined Polypharmacy is defined as taking 5 or more drugs concomitantly.[4] Polypharmacy may also be defined as the drug prescription and consumption without evidenced clinical indication.[2,5] Excessive drug prescription has been linked with the risk of adverse drug outcome. Polypharmacy has been associated with disability, adverse drug interactions, frailty, falls, and fragility and in extreme conditions even death may occur.[1] Polypharmacy is of public health concern because of toxic drug reactions.[2,6] In certain complicated clinical conditions, the multiple drug numbers may be appropriate to eradicate the disease and saves life of patients. While in other situations, the drugs may exceed the severity of disease status; this may be taken as biased favoring the pharmaceutical industry. Hence it is difficult to decide whether Polypharmacy is appropriate or inappropriate. Polypharmacy is a known risk factor in older age persons as they are vulnerable to toxic drugs reactions.

Polypharmacy increases the risk of adverse drug outcome due to drug – drug interactions, side effects and low adherence and compliance to drug therapy. Polypharmacy increases the chances of drug reactions and causes needless health expenditures. Redundant drug sale and high cost create burden to the general public.[6] Polypharmacy begins form physician to pharmacist and the patients. Patients also promote polypharmacy through self – medication as the drugs are sold without prescription. Patients usually don't follow the instructions of physicians or often the prescriptions are completely lacking the instructions of drug use. The present descriptive cross sectional survey analyzed the polypharmacy and prescription patterns of general practitioners in major cities of Sindh.

MATERIALS AND METHODS

The present descriptive cross sectional survey took place at the major cities of Sindh (Karachi, Sukkur, Tando Muhammad Khan and Tando Adam) from January 2021 to June 2021. An online database system was developed for simultaneous data entry by the authors. The present study is a descriptive cross sectional survey - questionnaire-based. The questionnaire was designed by the authors of research team members. Prescription papers of general practitioners were collected from main pharmacies of major cities of Sindh as mentioned above. Questionnaire included four parts for each prescription. Prescription was checked first for – doctor name, qualification, registration number and date and second – name of patient, age, demographic features, physical examination findings and diagnosis, and third – drugs prescribed, drug dose, instructions of drug intake and fourth – legibility of prescription. Inclusion of prescription was based on the resident of cities as mentioned, doctors practicing in the resident cities and pharmacies of resident cities. Prescriptions were photocopied and data was entered in online database system that was accessed by all authors simultaneously. Prescription data was collected through probability convenient sampling method. Total 7590 prescriptions were collected within six months and data was saved in the questionnaire online. Polypharmacy was defined as use of 5–8 drugs, Excessive Polypharmacy (EPP) use of > 8 drugs and non –polypharmacy (NP) ≤ 4 drugs concomitantly.[8] Counted medications included; antibiotics, anti-hypertensive, anti-diabetic, herbs, minerals, vitamins, sleeping pills, pain killers, steroids, OTC medications, etc. Questionnaires were checked by authors and data was entered online database system that was shared with corresponding author. The data was analyzed SPSS for Windows ver. 22 (Chicago, IL, USA). Data was presented as frequency and % for categorical variables. The Microsoft Excel sheet was employed for graphing. Chi – square testing was used for categorical variables. Level of significance was taken at ≤0.05.

RESULTS

A sample of total 7590 prescriptions was analyzed and checked for the data variables. Prescription letter pad was observed in 5199 (68.4%) while 2391 (31.5%) were written on plain papers. Name of doctor, qualification, registration number were mentioned in 4987 (65.7%), 3561 (46.9%) and 171 (2.25%) respectively. Legibility was observed in 2190 (28.9%) prescriptions. Date and signature were observed in 14.7% and 2.62% respectively (table – 1). Table – 2 shows the details of patients data. Drug indications, diagnosis and laboratory investigations were noted in 109 (1.4%), 119 (1.5%) and 217 (2.8%) prescriptions only. Polypharmacy (5–8 drugs), Excessive Polypharmacy (> 8 drugs) and Non –polypharmacy (≤ 4 drugs) were observed in 4653 (61.3%), 1978 (26.1%) and 959 (12.6%) respectively (P=0.0001) (table – 3 & graph – 1). Proton pump inhibitors were most frequently prescribed drugs 7103 (93.5%), followed by calcium + vitamin D supplements 6987 (92.1%), steroids 6705 (88.3%), multivitamin and multi-mineral pills 6619 (87.01%) (Table – 4). Frequently prescribed drugs are shown in Graph – 2.

Table No.1: Details of prescription paper (n=7590)

	n	%
Plain prescription paper	2391	31.5
Prescription letter pad	5199	68.4
Name of Doctor	4987	65.7
Qualification	3561	46.9
Registration No.	171	2.25
Legibility	2199	28.9
Date	1120	14.7
Signature	199	2.62

Table No.2: Details of patients data (n=7590)

	n	%
Name of patients	6789	89.4
Age	231	0.31
Pulse	89	0.11
BP	913	12
Physical findings	0	0
Drug indications	109	1.4
Diagnosis	119	1.5
Laboratory investigations	217	2.8

Table No.3: Prescription patterns (n=7590)

	n	%	P
Polypharmacy (5–8 drugs)	4653	61.3	0.0001
Excessive Polypharmacy (> 8 drugs)	1978	26.1	
Non –polypharmacy (≤ 4 drugs)	959	12.6	

Table No.4: Drugs prescribed (n=7590)

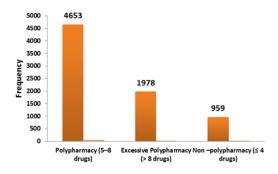|	n	%
PPI	7103	93.5
Steroids	6705	88.3
Benzodiazepines	3459	45.5
Antibiotics	4671	61.5
Multi vitamin	2312	30.4
Multivitamin + Multimineral	4307	56.7
Calcium + Vitamin D supplements	6987	92.1
NSAIDS	3101	40.8
Anti - hypertensive	319	4.2
Anti - diabetics	1130	14.8
Herbal agents,	2310	30.4
Major tranquilizers	139	1.8

Figure No.1: Prescription patterns – polypharmacy, excessive pharmacy and non – pharmacy
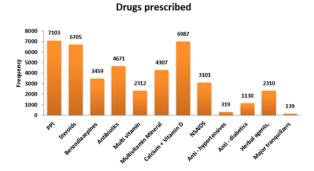

Figure No.2: Frequency of drugs prescribed

DISCUSSION

The present descriptive cross – sectional survey observed high frequency of Polypharmacy (PP) (5–8 drugs) and Excessive Polypharmacy (EPP) (> 8 drugs) found in 4653 (61.3%) and 1978 (26.1%) respectively (P=0.0001). Non –polypharmacy ($\leq$ 4 drugs) were observed in 959 (12.6%). An ideal upper drug limit of 2.0 has been recommended by the World Health Organization.[8,9] but this has never been appreciated by the doctors. A previous study by Raza et al[8] also reported PP is prevalent in the country but authorities have failed to control it. Reports from other countries have also reported PP is prevalent in different areas of the World.[10,11] Bangladesh and Yemen have controlled the PP through successful implementation of drug policy.[12,13] PP carries high risk of adverse reactions through drug – drug interactions and complications in addition to high cost.[8] In present study, majority of prescriptions were not found as per standard of medical practitioners. The findings are supported by previous studies.[1,2,5] Previous studies from Sweden[14] and China[15] has reported high prevalence of polypharmacy that supports the present study. A Korean study[16] reported prevalence of 86.4% that is too much high compared to present and other previous studies.[2,9] A previous study[2] reported PP and EPP of 292 (58.4%) and 51 (10.2%) respectively and is consistent to the present study. In present study, the proper prescription letter pad was observed in 5199 (68.4%) while 2391 (31.5%) were written on plain papers. Plain paper prescriptions were most probably written by quacks. In present study, the name of doctor, qualification and registration number were mentioned in 4987 (65.7%), 3561 (46.9%) and 171 (2.25%) respectively. In present study, the legibility of prescription was 2190 (28.9%) this indicates poor compliance on part of medical practitioners. Poor legibility often results in inadvertent drug substitutions.[17] Finding of poor legibility is consistent with previous studies.[18,19] In present study, the drug indications, diagnosis and laboratory investigations were noted in 109 (1.4%), 119 (1.5%) and 217 (2.8%) prescriptions only. In present study, the proton pump inhibitors (PPI) were most frequently prescribed drugs 7103 (93.5%), followed by calcium and vitamin D supplements 6987 (92.1%), steroids 6705 (88.3%), multivitamin and mineral pills 6619 (87.01%). In present study, the PPI were mostly prescribed drugs that are an alarming situation and has been notified previously.[20,21] Despite increasing awareness of PPI related adverse reactions, its use is very common and moreover it is being used as self-medication. Overuse of PPI adversely affects the patients' quality of life (QoL) and drug costs.[22] Limitations of present study are short duration of study and short number of prescriptions collected from different cities may not be representative of country. It needs similar studies conducted at national level to control the polypharmacy and improve drug prescriptions.

CONCLUSION

The present study reports the polypharmacy and excessive polypharmacy are on rise in the country. Findings of present study highlight the need to revise medical practice and drug dispensing policy in the country. Prescriptions of general practitioners need improvement on urgent basis to stop quackery. Proton pump inhibitors, calcium, vitamin D supplements, steroids, multivitamin and mineral pills are commonly prescribed drugs without proper clinical diagnosis and

indication that needs to be controlled. Establishing innovative clinical strategies of drug prescription is advised to control polypharmacy and self-medication.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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