World Journal of Pharmaceutical Sciences
ISSN (Print): 2321-3310; ISSN (Online): 2321-3086
Published by Atom and Cell Publishers
Available online at: http://www.wjpsonline.org/
Original Article

Problems associated with polyphrmacy in elderly patients in Kurdistan region/ Iraq

Ahmed Omer Redha[1], Tavga Ahmed Aziz[2*]

[1] Department of Pharmacy, Kirkuk General Hospital, Kirkuk, Iraq
[2]Department of Pharmacology and Toxicology, School of Pharmacy, Faculty of Medical sciences, University of Sulaimani, Kurdistan, Iraq

Received: 20-03-2015 / Revised: 29-03-2015 / Accepted: 30-03-2015

ABSTRACT

Elderly people on multiple medications are at particularly high risk of drug related problems, which cause significant preventable morbidity and mortality. Evaluate the problems associated with polypharmacy in elderly. A prospective, multi-center cross-sectional study was performed to evaluate medication use in elderly persons in Kurdistan Region. A face-to-face structured interview approach, based on standardized questionnaires, was used in the study. The study shows that the prevalence of poly pharmacy in female is more than males. The distribution of chronic disorders is as follow starting from the highest percentage: hypertension, heart diseases and diabetes mellitus. Most of the patients are consulted about the use of their medication before dispensing which is afforded mostly by the physicians. The study sample showed many complications and adverse reactions such as falling down, memory loss, headache, constipation, and general weakness. Polypharmacy is a significant issue and little research has been conducted regarding the methods primary care providers utilize to assess polypharmacy. Better information needs to be provided to patients about the risks and benefits of drug therapy.

KEY WORDS: Elderly, polypharmacy, complications, adverse reactions.

INTRODUCTION

There is significant increase in the number of the people who suffer from chronic diseases, which create exponentially increasing medical, economic, and social age related problems. Their economic costs estimated to rank fourth in the developed world, which follow cardiovascular disease, cancer and diabetes. Although polypharmacy is considered as one of the problem areas; few studies have focused on the development of polypharmacy over time. Those few studies have found an increase in the extent of polypharmacy over time. [1-2]

There are some well-known issues in pharmacotherapy for elderly patients. Firstly, changes in drugs pharmacokinetics (absorption, distribution, metabolism and renal excretion) and pharmacodynamics (e.g. sensitivity to a given dose of drug) occur in elderly people due to changes of constitution and physiology with age. [3] Secondly, elderly persons often require the use of medicines on a long-term basis to manage chronic diseases. Lastly, given that older patients often have multiple concurrent diseases, they are more likely than younger persons to take multiple medicines, which, increases the chances of drug-drug interactions and inappropriate medication use. [4]

Risk factors for polypharmacy: Risk factors for polypharmacy include: Old age, comorbidity, poor self-rated health, recent hospitalization, female, low educational attainment, depression, and multiple prescribers and prescriber characteristics. [5-6]
The consequences of polypharmacy fall into six major categories. The first five of these namely, non-adherence, adverse drug reactions, drug-drug interactions, increased risk of hospitalization, and medication errors, are closely linked. These consequences are interrelated and may lead to deterioration of the quality of life of the elderly patient. The sixth consequence is increased cost of the medication and the cost of treating adverse reactions resulting from the use of these medications. [7] Prevalence of polypharmacy and factors affecting it has not been investigated thoroughly in Iraq/ Kurdistan region, the present study was designed to investigate the factors and problems associated with polypharmacy.

***Corresponding Author Address:** Tavga Ahmed Aziz, Department of Pharmacology and Toxicology, School of Pharmacy, Faculty of Medical sciences, University of Sulaimani, Kurdistan, Iraq; E-mail: tavgababan98@gmail.com*

PATIENTS AND METHODS

Study design: The present study is a prospective multi-center cross-sectional study of medication use in elderly patients in Kurdistan Region, between the first of January and the end of Jun 2013.

Data collection methods: The researcher used the face-to-face structured interview approach, based on standardized questionnaires. The data for analysis are collected from patients in different health care institutions including hospitals, primary health care centers, and community pharmacies; the subjects had been asked to bring their medications along to show what they were taking 7 days prior the interview. The researcher had confirmed the respondents‟ medications use with a close relative or a caregiver. The brand names of all prescription drugs taken by the interviewee during seven days prior to the interview were recorded.

Sample selection: The study sample was selected from different categories of elderly people in the KRG in northern area of Iraq; these categories are the community dwelling elderly, residing with their families, or living alone. Patients aged 65 or greater were included as the lower limit inclusion of the elderly in the present study. Individuals in the sample were randomly selected, and simple random sampling approach was followed, in which the researcher visited both urban and rural areas within KRG.

Sample Size: One hundred-twenty-five elderly patients aged 65 years old or greater has been interviewed during the study, the patients had at least one chronic pathological condition in the following clusters: cardio-metabolic (consisting of diabetes, heart disease or hypertension), musculoskeletal (consisting of arthritis or osteoporosis), and respiratory (consisting of COPD or asthma). One hundred patients who are matching the study inclusion criteria have been chosen.

Data Analysis: Data analysis was performed using the Statistical Package for Social Science (SPSS) for Windows. The outcome parameters, related to the problems associated with drug prescription in elderly, were calculated as frequency presented as numbers or ratios with respect to the total sample included in the study. In order to limit the number of variables to be fitted in the model, only these independent variables found to be associated with polypharmacy in the bivariate analysis or the variables considered being relevant to the polypharmacy in the included patients were selected.

RESULTS

Social and demographic profile: Table 1 shows social and demographic data of the studied sample. It describes the demographic characteristics of the study population (Age, gender, level of education, marital status, cigarette smoking, and alcohol consumption profile).

Prevalence of poly pharmacy: The data in the current study shows that prevalence of poly pharmacy is 82%, (Table 2), distributed as follow: 54.88% are females and 45.12% are males.

Chronic morbidity: The results of the present study shows that the distribution of chronic disorders was as follow: 80% hypertension, 65% Diabetes mellitus, 70% heart diseases, 25% GIT diseases, 40% Respiratory diseases, 45% osteoporosis, 70% osteoarthritis, 2% depression and 5% sleep disturbances (Figure 1).

Frequency of hospitalization: Table 3 shows the frequency of hospitalization in elderly patients with polypharmacy.

Affordability of non-free drugs: Table 4 shows the number of patients that got non free drugs.

Behaviors of elderly when missing a dose and the level of knowledge about the purpose of the medications: Figure 2 and 3 demonstrates patient's behavior when missing a dose and their knowledge about the purpose of these medications.

Believes about the necessity of using medications and recognition of intolerable consequences: Figure 4 and 5 present believes of the elderly patients included in the current study about the importance of taking their medication and the intolerable consequences that appear upon stopping these medications.

Consultation and reference health personnel**:** In figure 6, 86 patients, out of 100, are consulted about the use of their medication before dispensing medications, and around 50 of those patients received consultation afforded by the physicians, while the pharmacists have a role in providing 25 patients with this service, and only 11 patients have the chance of being advised by the nurse staff.

Pattern of medications use by elderly patients: Table 5 shows the pattern of medication use by elderly.

Complications and adverse reactions profile of polypharmacy: Table 6 shows some complications due to polypharmacy. Regarding the adverse events

appeared during treatment, the incidence of headache was 80%, constipation 45%, general weakness 75% and other different forms of adverse events occur in 50% of patients (Figure 7).

DISCUSSION

The elderly usually have multiple medical problems, requiring prescription drugs to treat diseases and to prevent complications arising from them. [8]They use more medications than any other age group. [9] This high rate of drug use has been attributed in part to the accumulation of disease with aging. [10]

In the current study, the data shows that the prevalence of poly pharmacy is more in females than males. Care of individuals with multi-morbidity, which means the coexistence of two or more chronic conditions is an emerging area of research. [11]

The results of the present study showed that the distribution of chronic disorders was consistent with that reported in other studies. [12] Although the elderly consume a disproportionately large number of medications, because they have multiple chronic diseases and disorders, co-administration of several products is worrying, given the possibility of adverse reactions, the exceptional expense, and noncompliance with prescriptions for products essential to preventing and controlling chronic diseases. Polypharmacy is not always avoidable. Diseases such as arterial hypertension and diabetes mellitus (DM), highly prevalent among the elderly, usually require the use of several products of proven efficacy. [13]

To avoid drug interactions and compliance problems, some authors have suggested that drug regimens for older people should remain as simple as possible and the goal should be one or two treatments daily. The primary question in prescribing for the elderly should not be which drug to choose or how to administer it, but whether the drug is actually necessary. [14] Simpler drug regimens may be achieved by prescribing drugs that can be taken once daily and or by choosing a combination pill when adding a second drug. [15]
Multi-morbidity is associated with an increased number of hospital admissions; [16] this could be attributed to drug interactions, multiple medication use, which often results in harmful drug-drug interaction. [17] Such drug interactions have severe consequences such as hospital readmissions. [18] As the number of medications being taken by a given patient increases, the risk of drug interaction in that patient also increases. The risk of drug interaction can increase from approximately 6% in patients taking only two medications to 50% in those taking 5 medications and 100%in those taking 10 medications. [19]

Historically physicians have been entirely responsible for management of their patient's chronic diseases and complex medication regimens. Currently, pharmacists are increasingly involved in the medical team in managing patients' medication regimens by providing comprehensive medication reviews and educational services for both patients and physicians. Many studies have focused on pharmacist interventions to reduce polypharmacy and the outcomes that these interventions have upon humanistic and clinical factors. Specifically, studies have considered the number of medications and doses taken, patient adherence, social and functional abilities, and ADRs, in addition to the costs burden to the patient and the institution. [20]

CONCLUSION

Results of the study revealed that polypharmacy is a significant issue and little research has been conducted regarding the methods primary care providers utilize to assess polypharmacy. Interventions to improve the optimal use of medication will need to target policy, patients and physician. Better information needs to be provided to physicians and patients about the risks and benefits of drug therapy, and the problems of patient compliance and inappropriate and unnecessary prescribing need to be addressed.

Table 1: Demographic data of patients

Number of patients	100
Age (years)	
60-70	70 (70%)
71-80	25(25%)
>80	5 (5%)
Gender	
Male	41 (41%)
Female	59 (59%)
Marital status	
Married	55 (55%)

Divorced	10 (10%)
Widow	35 (35%)
Education status	
Illiterate	15 (15%)
Primary	25 (25%)
Secondary	25 (25%)
University	35 (35%)
Cigarette smoking habits	
Smoker	45 (45%)
Non-smoker	55 (55%)
Alcohol consumption	
Drinker	5 (5%)
Not drinker	95 (95%)

Table 2: Number of patients with poly pharmacy

No. of Drugs	No. of patients
<5 Drugs	18 patients
>5 Drugs	82 patients
Total	100

Table 3. Percentage of hospitalization

Admission no.	Non	1-2 times	3-5 times	>5 times
Percentage	40%	28%	20%	12%

Table 4. Percentages of affordability of non-free drugs by the selected sample

Ability to afford non free prescribed medication	**Percentage**
Always	80%
some times	10%
Rarely	8%
Never	2%
Total	100

Table 5. Pattern of medications use by elderly patients in the selected sample.

Type of practice	**Incidence (%)**			
	Always	**Sometimes**	**Rarely**	**Never**
Frequency of questioning elderly by physicians about using medications other than prescribed drugs	69	28	3	0
Using medications without prescription	50	18	18	14
Using all prescribed medications by elderly	77	12	11	0
Improper use of prescribed medications by elderly	19	25	41	15
Reading medication information by the elderly himself or by relative	49	11	25	15
Self-administration of medications	75	18	7	0
The knowledge about proper use of medications	88	10	2	0

Table 6. Possible complications profile for polypharmacy perceived by elderly patients in the selected sample.

Type of complication	**Incidence (%)**			
	Always	**Sometimes**	**Rarely**	**Never**
Falls due to medications use	15	35	18	32
Memory loss due to medications use	8	9	3	80

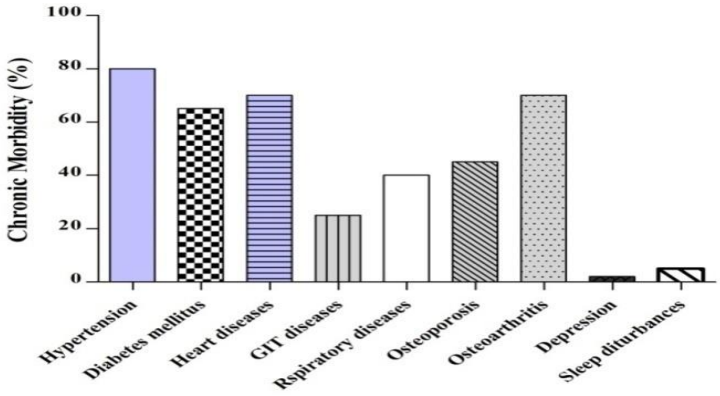

Figure 1. Distribution of chronic disorders in the selected patients; number of patients= 100.

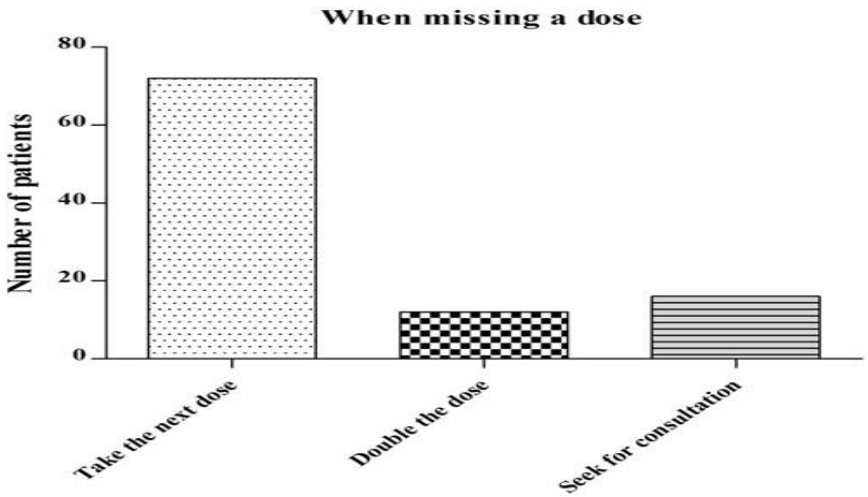

Figure 2. The action of elderly patients when missing a dose of their prescribed medications; number of patients=100.

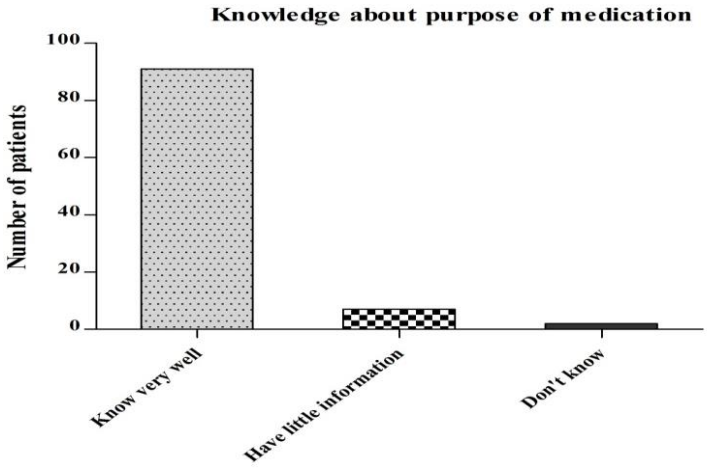

Figure 3. The level of knowledge about the purpose of medication among elderly patients; number of patients=100.

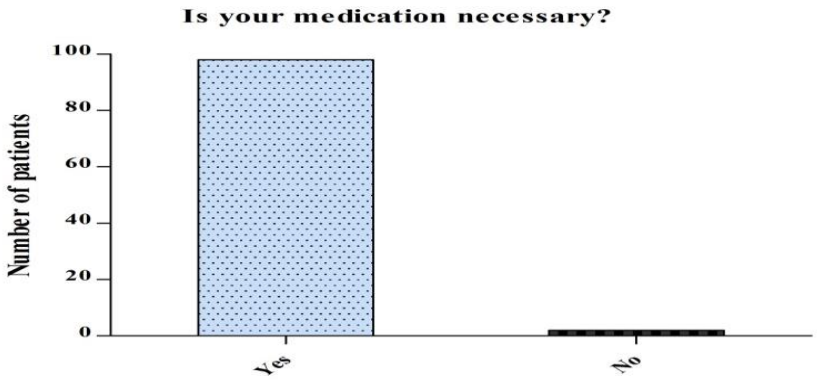

Figure 4. Recognition of medication necessity among elderly patients; number of patients=100.

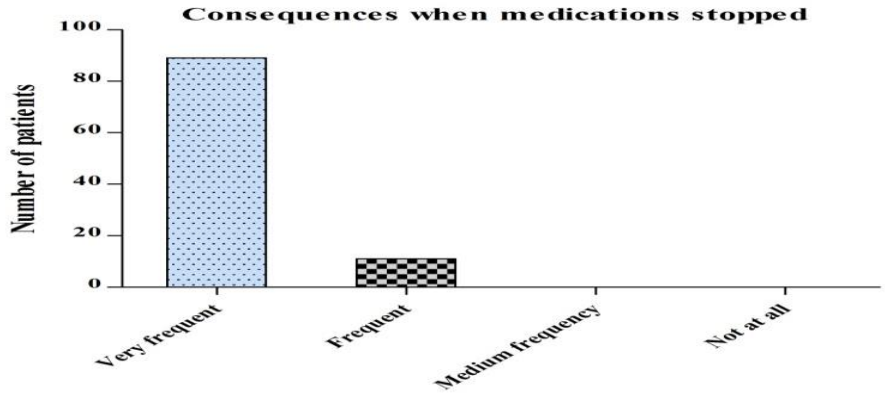

Figure 5. Recognition of intolerable consequences when medications stopped among elderly patients; number of patients=100.

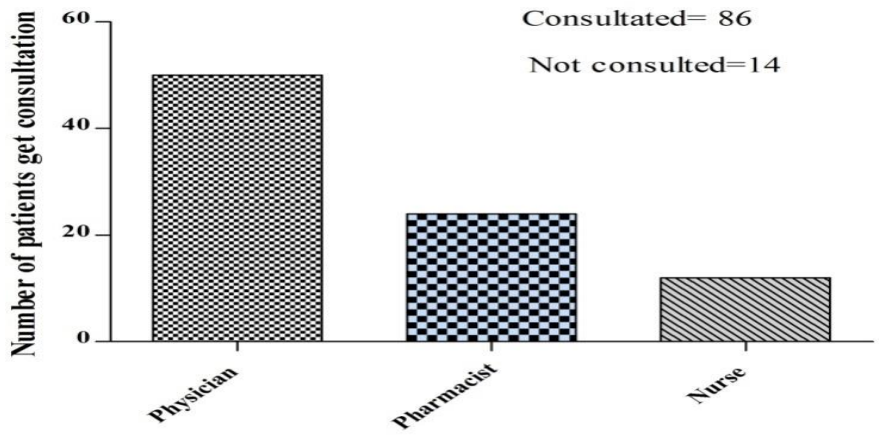

Figure 6. Number of elderly patients that successfully getting consultation and the reference for these consultations; number of patients=100.

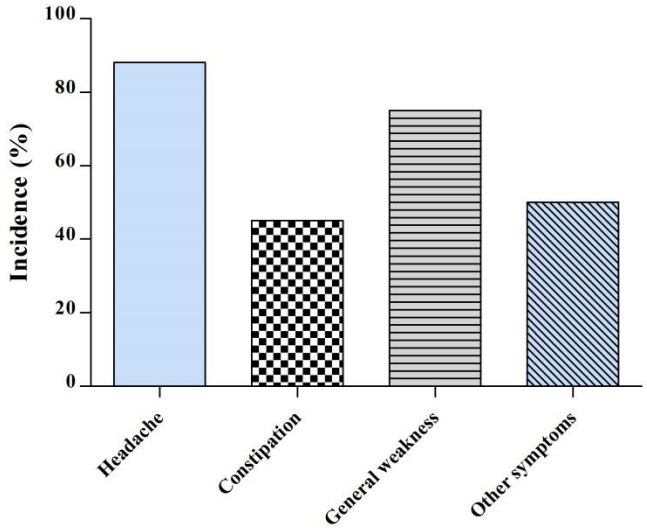

Figure 7.Incidence of unwanted symptoms experienced by elderly patients during treatment with prescribed medications. Number of patients is 100.

REFERENCES

1. Stewart RB et al. A longitudinal evaluation of drug use in an ambulatory elderly population. J ClinEpidemiol 1991; 44:1353-1359.
2. Stewart RB et al. Changing patterns of therapeutic agents in the elderly: a ten year overview. Age Ageing 1991; 20:182-188.
3. Martin U, Coleman JJ. Drugs and the Elderly, In: Mann RD, Andrews EB, (eds.), Pharmacovigilance,(2nd edn.), Great Britain, John Wiley & Sons. Ltd., 2007; pp. 515-527.
4. Masoodi NA. Polypharmacy: To Err is Human, To Correct Divine. Br J Med Pract 2008; 1(1):6-9.
5. Linjakumpu T et al. Use of medications and polypharmacy are increasing among the elderly. J ClinEpidemiol 2002; 55(8):809-817.
6. Haider SI et al. The influence of educational level on polypharmacy and inappropriate drug use: a register-based study of more than 600,000 older people. JAGS 2009; 57(1):62-69.
7. Zahn C et al. Potentially inappropriate medication use in the community-dwelling elderly. JAMA 2001; 286(22):2823.
8. Mamun K et al. Polypharmacy and inappropriate medication use in Singapore nursing homes, Ann Acad Med Singapore 2004; 33:49-50.
9. National Center for Health Statistics: Health statistics on older persons– United States, 1986.DHHS Publication No.(PHS) 87-1409, June1987. Washington, DC: DHHS Publication, 1987.
10. Jones D, Poole C. Medicine taking by elderly people: An overview, In: George CF, Woodhouse KW, Denham MJ, MacLennan WJ, (eds.), Drug Therapy in Old Age. Chichester, UK: Wiley and Sons, 1998:1-22.
11. Vyas A et al. Chronic condition clusters and polypharmacy among adults**.** Int J Fam Med 2012; 1:32-36.
12. Akkawi FTF. Prevalence and risk factors affecting polypharmacy among elderly patients in the North of West Bank, An-Najah National University -Faculty of Graduate Studies, 2008:52.
13. Rozenfeld S et al. Drug utilization and polypharmacy among the elderly: a survey in Rio de Janeiro City, Brazil. Rev PanamSaludPublica/Pan Am J Public Health 2008; 23(1):40.
14. Turnheim K. Drug therapy in the elderly. Exp Gerontol 2004; 39(11-12):1731-1738.
15. Lee RD. Polypharmacy: a case report and new protocol for management. J Am Board FamPract1998; 11(2):140-144.
16. Condelius A et al. Hospital admissions among people 65+ related to multimorbidity, municipal and outpatient care. Arch GerontolGeriatr 2008; 46(1):41-55.
17. Wehling M. Multimorbidity and polypharmacy: how to reduce the harmful drug load and yet add needed drugs in the elderly? Proposal of a new drug classification: fit for the aged. J Am GeriatrSoc 2009; 57(3):560–561.
18. Ruiz B et al. Factors predicting hospital readmissions related to adverse drug reactions. Eur J Clin Pharmacol 2008; 64(7):715-722.
19. Johnson AG et al. NSAID-related adverse drug interactions with clinical relevance: An update. Int J Clin Pharmacol Ther 1994; 32(10):509-532.
20. Chumney EC, Robinson LC. The effects of pharmacist interventions on patients with polypharmacy. Pharmacy Practice 2006; 4(3): 103-109.