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Full Length Research Paper

Irrational use of medications among elderly patients in an Ethiopian referral hospital

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Geriatric is potentially vulnerable to drug related problems. Inappropriate prescribing to these patient groups causes substantial morbidity and has become an important public health issue. The purpose of this study was to evaluate prescription practice in geriatrics patients attending medical ward of Dessie Referral Hospital (DRH). A cross sectional study design was used to collect data from patient cards aged more than or equal to 65 years old that visited DRH in south wollo zone over the last one year period from September 11/09/2014 to September 10/09/2015. Assessment of the prescription pattern was done by using Beers criteria and WHO core indicators. A total of 244 charts were evaluated. 868 drugs were prescribed to the study population. Number of encounters with antibiotic prescription was 155 (63.5%). The percentage of encounters in which an injection was prescribed was 82.4%. Analysis of the prescribed medications using the 2012 Updated Beers Criteria showed 56 patients with at least one potentially inappropriate medication prescribed giving a prevalence of 23%. The study indicates the prescribing practices in the hospital associated with greater poly-pharmacy and inappropriate medication use.

Key words: Elderly, Dessie referral hospital, beers criteria, WHO core indicators.

INTRODUCTON

Geriatric is a population whose age is 65 years and above. Optimizing drug therapy is an essential part of caring for an older person.

Prescribing error is defined as prescribing practice that deviates from the accepted standards and ordering drugs with greater risk of adverse drug reactions (ADR) (Sloane et al., 2002). Geriatrics is potentially at higher risk of drug therapy problem than other patient groups.

Poly-pharmacy is common in geriatrics patients due to the presence of comorbidities, increased occurrence of chronic diseases involving various systems and aging related complications. All these factors call for prescribing many medications to treat disorders and improve quality of life of geriatrics patients. On the other hand, increased used of multiple medications will contribute to the occurrence of drug related problems in this patient groups. Old age related physiologic changes which lead to altered pharmacokinetics and pharmaco-dynamics also make them more prone to the unwanted effect of medications (Sapkota et al., 2011).

Drug related complications in the geriatrics are becoming a major concern in aged care. The control of this problem needs understanding of the medication use practice, because assessing of this practice is the basic

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first steps in identifying and resolving problems. Different factors are attributable to high incidence of drug related problems in geriatrics (Taskeen et al., 2012). Although, these are prevalent in geriatrics, many can be preventable which consequently improves patient outcomes. Studies on medicine use in geriatrics are limited in developing countries like Ethiopia.

Therefore, the purpose of the current study was to evaluate general medication utilization patterns using WHO core prescribing indicators (El Mahalli, 2012) and assess drug prescribing according to Beers criteria 2012 method (an explicit process measure for assessing potentially inappropriate prescribing (PIP) in older people) in geriatric patients (Campanelli, 2012), in a referral hospital.

METHODOLOGY

Study setting

The study was done in Dessie Referral Hospital, which is located 401 km North of Addis Ababa, Ethiopia, Amhara region and South wollo zone. The hospital has different units: internal medicine, pediatrics, gynecology/obstetrics, surgery, dentistry, psychiatry, ophthalmology, hospital pharmacy and antiretroviral therapy (ART) clinic and there are about 4 different pharmacies within the hospital.

Study design and period

A cross sectional study design was used to collect data from patient cards aged more than or equal to 65 years that visited DRH in south wollo zone over the last one year period from September 11/09/2015 to September 10/09/2016. Cards with missed relevant data were excluded from the study.

Operational definition

Inappropriate prescribing

This is defined as prescribing practice that deviates from WHO core indicator and Beers criteria.

Study procedure

Structured data abstraction tool was used to extract the necessary demographic and relevant points from the patient chart. The relevant data collected from case sheets were properly documented in a separate data collection form. The obtained data were then analyzed using fine WHO core prescribing indicators and the appropriateness of the prescriptions using Beers criteria, 2012.

Ethical considerations

The formal letter was taken from Wollo University, College of Medicine and Health Science before the study was conducted. During data collection process, all elderly patients' related data was kept confidentially. Patient confidentiality was ensured, thus name and address of the patients were not recorded in the data collection format. The medical information was not disclosed to any external subjects/media so that the patients' confidentiality can be kept.

RESULTS

Among 244 charts evaluated, 150 (61.5%) were males. Most of the patients were in the age group of 65 to 74 years (n=160, 65.6%) followed by 75 to 84 years (n=70, 28.7%), >84 years (n=14, 5.7%).

Prescription pattern

Number of prescribed drugs to the study population was 868. The mean of drugs prescribed per prescription was 5.1. Depending on the number of drugs prescribed, prescriptions with greater than 5 medicines were considered as poly-pharmacy and 56 (23.0%) poly-pharmacy were found out. Number of prescriptions encountered with antibiotic, injection was 155 (63.5%), 82.4% respectively. And those prescribed by generic name was 744 (85.7%) and the drugs given by brand name were 124 (14.3%). Among the 868 medicines prescribed, 850 (97.93%) were prescribed from EDL of Ethiopia (Table 1).

Analysis of prescribing practice using the 2012 Updated Beers Criteria revealed 56 patients with at least one potentially inappropriate medication prescribed with a prevalence of 23% (Table 2).

DISCUSSION

This study showed poly-pharmacy in elderly patients with a mean number of drugs per prescription to be 5.1. This is higher than the WHO standard of 1.6-1.8. And lower than the result from Indian study (9.09 per prescription) (Febin et al., 2015), but comparable to similar studies conducted by Taskeen et al. (2012), where the average drugs per prescription were 6.07 and by Ramesh et al. (1999) where the average drugs per prescription were 6.33. Poly-pharmacy may lead to noncompliance and extra-costs. But the recommendation of WHO is not applicable for inpatient set ups and in such cases, poly-pharmacy can be justifiable.

Significant number of prescription drugs was prescribed by brand names (14.3%). This result is comparable with other studies but deviates from WHO's recommendation of 100%. This implies that the prescribers are not complying with the recommendations of WHO prescribing indicators. Generic prescription is highly recommended because it allows dispensing cost effective brand products. Brand prescription has so many short comings, above all, it poses high economic burden on patients. The presence of high brand prescription in the current study may be attributable to promoter's impact and prescribers' knowledge gap in the importance of generic prescription.

Table 1. Frequency of prescribing indicators as compared to WHO standards.

Prescribing indicator (per prescription)	Frequency	WHO standard
Mean of drugs	5.1	1.6-1.8
Percent of generic prescription	85.7%	100%
Percent of antibiotics	63.5%	20-26.8%
Percent of injections	82.4%	13.4-24.1%

Table 2. Sample of potentially inappropriate drugs prescribed as per Beers criteria, 2012.

Drugs	Concern
Diphenhydramine	increased risk of anticholinergic effects or toxicity
Diazepam	Increased sensitivity to benzodiazepines side effects
Atropine	Highly anticholinergic, uncertain effectiveness
Digoxin (>1.25 mg/day)	Beyond this dose the risk outweighs the benefit

The antibiotics prescription practice showed the prevalence of 63.5% which is very high as compared to the WHO standard (20.0 to 26.8%). But comparable with the study conducted by Gopinath and Rajalingam (2011) where 63% of patients received antibiotics. The high percentage of antibiotics prescribed in this study setting may be due to the set up being inpatient where unstable patients with comorbidities might require higher numbers of antibiotics and these patients may develop hospital acquired infections (Gopinath and Rajalingam, 2011). Consequences of overuse of antibiotics leads to antibiotics resistance and extra cost to treat drug resistant conditions.

The prevalence of injection drug use was 82.4% which is also beyond the recommended range of WHO (13.4-24.0%). This figure found in this facility may be due to the setting where the study was conducted. In general, in patient departments or units, patients that are unable to take oral medication are seen and followed up routinely, so the need for injections might be maximal. The use of injections will probably be lower had it been was conducted in the outpatient department of the hospital.

Percentage of prescribed drugs from essential drug list of Ethiopia was 97.93%. A study at Jimma Hospital, south west Ethiopia (Mohammed and Tesfaye,1997) and Hawasa Hospital (Desalegn, 2013) showed comparable results, where almost all drugs prescribed for the health problems were on the essential drug list of the country. Prescribing drugs from essential drug list is very important for economic use of health care budget and to ensure continuous supply of essential drugs (Hogerzeil et al., 1989).

Based on Beers criteria evaluation, the prevalence of inappropriate prescribing was 23%. This figure is comparable to other studies conducted by Veena et al. (2012) and Fadare et al. (2013) where 21.69 and 25.5% prescriptions were found potentially inappropriate, respectively. This high figure may be attributable to the absence of protocols and unavailability of safer alternatives.

CONCLUSION AND RECOMMENDATIONS

This study revealed the current prescribing practices in the hospital associated with greater poly-pharmacy and inappropriate medication use. Prescribers and pharmacists are recommended to take care in managing geriatrics and familiarize themselves with tools that can be used by practitioners to optimize patient outcomes. Further prospective studies are recommended. Protocols should be developed on geriatric drug use with focus on medication safety by multi-disciplinary approach.

Abbreviations

EDL, Essential drug list; **DRH,** Dessie Referral Hospital; **PIM,** potentially inappropriate medications.

CONFLICT OF INTERESTS

The authors declare that they have no conflict of interest.

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