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Research Article

DUPLICATION OF OXYCODONE PRESCRIPTIONS AT PHARMACY DEPARTMENT, HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

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ABSTRACT

This retrospective study was done at the Pharmacy Department, Hospital Universiti Sains Malaysia (HUSM), Malaysia to investigate the frequency for duplicate prescribing and to define the impact of this in term of cost. This study was restricted to prescription claims data during January to December 2009. Duplicate prescribing was convinced and valid when oxycodone was being prescribed and dispensed during an overlapping time period. Drug cost was evaluated based on current drug price. Of the 212 patients that were prescribed with oxycodone, 103 patients were prescribed with more than one prescription and 109 patients had only one oxycodone prescription. There were duplicate prescribing involving 19.3% (n = 41) of the patients. Calculated extra hospital expenditure due to duplicate prescribing of oxycodone based on drug cost was RM 12,797.20. Based on our result, there were patients that were at risk of duplication of oxycodone therapy. This patient might manifest higher risk of overdose with unpredictable or undesirable effects. Moreover, it involves large amount of preventable healthcare wastage. We conclude that, it is undeniable that cost effectiveness is favored by prevention or reduction in drug duplication at the dispensing level.

Keywords: Pharmacy, Dispensing, Prescriptions, Duplicate, Oxycodone, Hospital costs.

INTRODUCTION

Throughout the years, several studies around the globe have revealed that a significant number of duplicated prescriptions were prescribed to patients[1,2,3,4,5,6,7]. However, relatively little is known about duplicated prescriptions in our hospital setting. Drug duplication is generally defined as the prescribing and dispensing of the identical medicine or two or more medicines of the same therapeutic class during an overlapping time period[4,6]. Presently, this issue is highlighted owing to numerous unwanted consequences. For examples, patient with duplicated medicines might manifest higher risk of overdose, toxicity, adverse drug reaction, and increase risk of drug-drug interaction with unpredictable or undesirable effects and moreover it is a significantly preventable healthcare wastage[8]. Thus, it is undeniable that cost effectiveness is favored by prevention or reduction in drug duplication at the dispensing level.

Drug duplication is particularly valuable as a quality measure in today's health environment as patients are increasingly consulting several physicians. Identification of duplicate prescriptions can be a flag that the patient may be taking too much of a medication. A potential area that could be usefully studied was identified as the medicines liable to be abused or liable to cause dependence. Oxycodone is an extremely dangerous drug, and it is one of the most widely abused drugs among teenagers today. Because it is time-released, crushing the tablet will cause problems such as overdose because the amount is considered too much at once[9,10]. Oxycodone is an opioid analgesic. Abusing oxycodone is like abusing heroin because both are opioids and highly addictive. Symptoms of an oxycodone overdose are slow breathing, seizures, dizziness, confusion, mental cloudiness, anorexia, muscle weakness, loss of consciousness, coma, cold and clammy skin, small pupils, and dry mouth. Other symptoms that occur less often are itching, skin rashes, heavy sweating, distant look, slurred speech, headaches, and sleepiness[9,10,11,12].

Due to the possible negative impacts of drug duplications, we designed a retrospective study to investigate the frequency for duplicate prescribing of oxycodone and to define the impact of drug duplications on hospital expenditure. This study was done to test the hypothesis that the identification of duplicate prescriptions could prevent unnecessary waste of hospital expenditure.

MATERIALS AND METHODS

This is a retrospective study that was done at the Pharmacy Department, HUSM, Malaysia. Our study is restricted to the prescription claims data at outpatient pharmacy during 12-month period (from January to December 2009). Duplicate prescribing is convinced and valid when oxycodone was being prescribed and dispensed during an overlapping time period. All the data were collected using a form. Data such as patient identification number, date, drug regime, quantity dispensed, and days' supply dispensed were collected and recorded from all prescriptions that consisted oxycodone (controlled release tablet - OxyContin®). An illegible prescription where the researcher could not read the name and/ or registration number was excluded from this study. Drug cost was evaluated based on current drug price. Descriptive analysis was done using SPSS Version 12.

RESULTS

Two hundred and twelve patients were prescribed with oxycodone and 94 (44.3%) were female. The age for patients ranged from 14 to 90 years and the mean age (SD) was 50.9 (15.30). Of the 212 patients that were prescribed with oxycodone, 103 patients were prescribed with more than one prescription and 109 patients had only one oxycodone prescription. In 2009, 286,126 prescriptions were screened at the outpatient pharmacy (from various clinics) and from that amount 517 (0.2%) are prescriptions that consisted oxycodone. About 495 (95.7%) from the whole prescriptions that consisted oxycodone are new prescriptions. Other 22 (4.3%) are refill prescriptions. The average number of oxycodone prescriptions dispensed per month was 43.1 (Figure 1).

Table 1: Number of oxycodone prescriptions dispensed by product strength

Tablet	Dispensed prescription	
	Quantity	Percentage (%)
10 mg	314	60.7
20 mg	166	32.1
10 mg and 20 mg	37	7.2
Total	**517**	**100.0**

In 2009, 18014 and 13803 tablets of oxycodone 10 mg and 20 mg were dispensed from the outpatient pharmacy, respectively. Total number of prescriptions dispensed by product strength is shown in Table 1. This shows that the 10 mg strength of oxycodone being the most commonly dispensed.

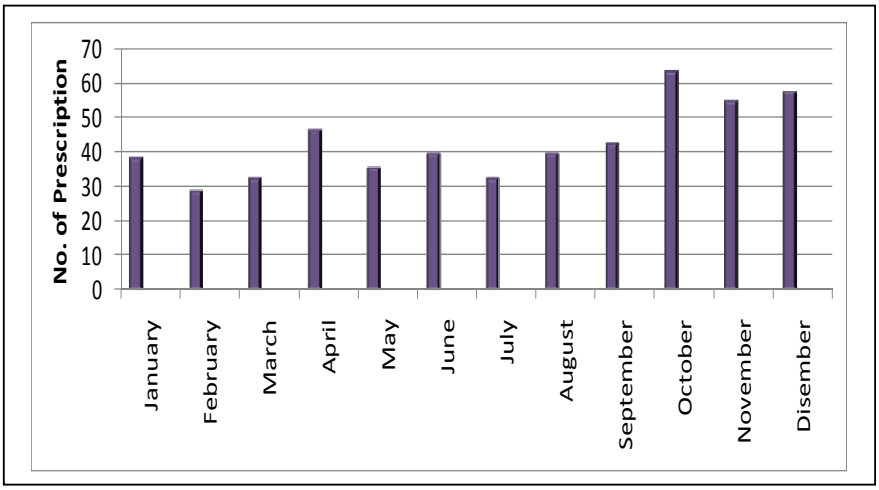

Fig. 1: Distribution of oxycodone prescriptions in 2009

Of the 517 dispensed prescriptions, 18.2% were duplicate prescriptions. There were duplicate prescribing involving 19.3% (n = 41) of the patients. Total number of duplicate prescriptions was 94, resulting in an average of 0.44 duplicate prescriptions per patient.

In term of drug cost, total price or cost of oxycodone for all dispensed prescriptions was RM 112,669.70. Total drug cost by product strength is shown in Table 2. Average cost of oxycodone for a prescription was RM 217.93.

Table 2: Cost of oxycodone for all prescriptions and loss expenses from oxycodone duplication by product strength

Variable	Tablet	
Strength	10 mg	20 mg
Price per tablet (RM)	2.50	4.90
Total cost for all prescriptions		
Number of dispensed tablet	18014	13803
Cost (RM)	45,035.00	67,634.70
Total cost (RM)	**112,669.70**	
Total cost for duplicate prescriptions		
Number of Extra Tablet Dispensed tablet	1536	1828
Cost (RM)	3,840.00	8,957.20
Total cost (RM)	**12,797.20**	

Calculated extra hospital expenditure due to duplicate prescribing of oxycodone based on drug cost was RM 12,797.20 (Table 2) resulting in percentage of loss due to duplicate prescribing of oxycodone of 11.4%. Average cost of oxycodone for a duplicate prescription was RM 136.14.

DISCUSSION

There is a growing concern about medication error. Medication errors such as illegible prescription, duplicate prescription, wrong dose, wrong frequency and drug interaction may result in increased number of unwanted events, in addition to the important economic impact in healthcare institutions. To ensure that patients are exposed to minimal risk when seeking medical treatment, all health organizations in Malaysia are now required to report medication errors to allow remedial programs to be instituted.

Previous study about medication errors in Malaysia, did not report the frequency of duplicate prescribing[13,14,15]. We found duplicate prescribing in 19.3% of the patients. In Brazil, a study found only 30 (0.8%) prescriptions with a duplicate item detected among 3,931 prescriptions analyzed[4]. In Mexico, duplicate drugs were found in 14 out of 370 (3.8%) the prescriptions analyzed[5]. In the United State of America, duplicate active prescriptions for the same drug and dosage strength was found in 28.0% and 37.0% of the prescriptions analyzed, respectively[6]. In Indonesia, the incidence of duplication therapy was 19.7% (23 out of 117 incidences)[7]. The differences in the compared data might be due to sample differences and definition of drug duplication or methods to detect duplicate. For example, a study in Mexico categorized medication duplicities, where at least one of the drugs was repeated in the same prescription[5]. In a study in Japan indicated drug duplication when the same therapeutic agent was contained in more than one medication used[2]. A study in the United State of America defined duplicate prescriptions when there was more than one current refillable prescription for the same drug and dosage strength[6]. Duplication of therapeutic class was defined as two or more drugs of the same therapeutic class[6]. In Brazil, a study defined prescription with duplicate item as one or more drugs prescribed more than once to the same patient taking the dosage into account[4]. In our study, duplicate prescribing or drug duplication was convinced and valid when oxycodone was prescribed and dispensed during an overlapping time period.

Calculated extra hospital expenditure due to duplicate prescribing of oxycodone based on drug cost was RM 12,797.20. Many pharmacies now collect unwanted or unused medicines for safe disposal, and patients may return their medicines. These activities indirectly can reduce the loss expenses from the drug duplication.

There are some limitations of this study. First, our study has a selection bias caused by the exclusion of data from inpatient pharmacy. Re-examination including these data may be necessary in the future. Second, we did not examine drug duplication of all medications written in all the prescriptions dispensed. We restricted the sample to the dispensed prescriptions that contained oxycodone. Perhaps these would be worthwhile to examine all dispensed prescriptions in the future study to see if there is a difference in the frequency of drug duplication. Lastly, we did not investigate the drug

duplication in term of therapeutic class and evaluated drug duplication retrospectively. However, retrospective study is not a proper method; it should be done prospectively to avoid any potential unwanted events to the patients.

CONCLUSION

We identified duplicate prescriptions of oxycodone in our hospital setting. This duplicate prescribing of oxycodone caused unnecessary waste of hospital expenditure. We conclude that, it is undeniable that cost effectiveness is favored by prevention or reduction in drug duplication at the dispensing level.

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