

One fourth of acutely admitted patients use over-the-counter-drugs 24 hours prior to hospitalisation

Magnus Pedersen¹ & Mikkel Brabrand²

ABSTRACT

INTRODUCTION: Use of over-the-counter (OTC) drugs is increasing and is poorly registered, which can lead to complications. The most commonly used OTC drugs are analgesics, and their usage is highest among elderly patients. Our study investigates the use of OTC drugs 24 hours prior to hospitalisation and the effects of this intake.

MATERIAL AND METHODS: Junior physicians on call interviewed patients admitted to the medical admission unit at South-West Jutland Hospital in Esbjerg using a modified chart template. Adult patients aged 15 and older admitted during a two-week period in August 2012 were included. Patients were asked about consumed OTC drugs, dosage, indication and effect.

RESULTS: From a total of 349 admissions, 188 usable chart templates were registered (54%), and information on OTC usage was registered on 165 of these (88%). The patients where elderly (median: 70 years) and 43 reported use of OTC drugs (26%). A total of 22 different OTC drugs had been consumed with analgesics being the most widely used OTC drugs (74%). The majority had taken the drugs on a relevant indication (88%), most commonly pain. Half of the patients had taken the drugs in a relevant dosage (51%). In all, 60% felt an effect of the intake and the majority felt an effect on pain symptoms.

CONCLUSION: One in four patients used OTC drugs 24 hours prior to hospitalisation and primarily analgesics were used. Most patients used OTC drugs relevantly and half with a positive effect. The intake is poorly registered, and there is a need for an increased focus on the rising intake of OTC drugs to avoid potential side-effects and medicine interactions.

FUNDING: not relevant.

TRIAL REGISTRATION: not relevant.

Consumption of over-the-counter drugs (OTC drugs) is common [1-5] and is poorly registered during hospitalisation [1, 2, 4]. Investigations have shown that between one and two thirds of a population have an intake of OTC drugs during a period (days to a year) when questioned, reviewing medicine lists and/or hospital charts and registering available medicine [1-5]. Consumption has been increasing over the years, while still more drugs have become available as OTCs [6-8]. This increased intake can lead to side effects [2, 9, 10] or inter-

actions with prescription medicine [7, 10], which many patients are unaware of [1, 2, 9, 10]. Use of analgesic OTC drugs is common [1, 4, 7, 10, 11], and especially the elderly have a large intake of OTC drugs [2, 5, 8], while at the same time they are vulnerable to side effects and interactions [8, 10]. As the availability of information about symptoms and diseases is increasing and more drugs become available as OTC drugs, the basis for self-medication is better than ever. As a consequence it has become increasingly difficult for physicians to assess a patient's medication [12], which can lead to misdiagnosis, increased risk of harmful interactions and which may, overall, prolong, exacerbate and/or induce illness.

Earlier investigations have primarily investigated the intake of OTC drugs outside of hospitals [1, 3, 4] and a year prior to hospitalisation [2]. In studies regarding hospitalisation [1, 2], one looked prospectively at medicine lists prior to and during hospitalisation [1], while the other study investigated previously hospitalised elderly people [2]. The available data are thus scarce or non-existing regarding OTC drug intake prior to hospitalisation for the general public. To our knowledge, no one has investigated the intake of OTC drugs in the immediate course leading up to hospitalisation or the effect of the taken OTC drugs.

The aim of this study was to clarify the consumption of OTC drugs 24 hours prior to hospitalisation of adults aged 15 years and older and their reported effect.

MATERIAL AND METHODS

Data were collected in the Medical Admission Unit at South-West Jutland Hospital in Esbjerg in the period 1-14 August to 2012. The contingency population is 220,000, and the unit receives patients from all medical specialties.

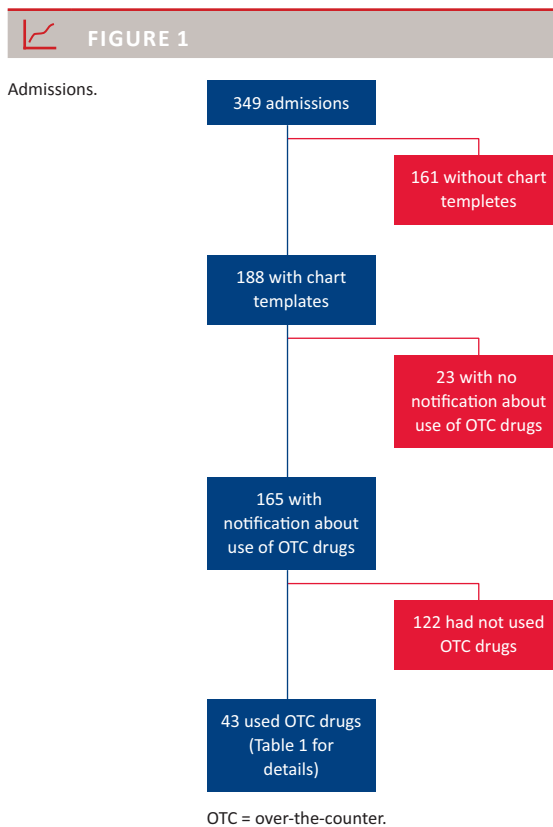
The junior physician on call uses a paper chart template when admitting patients. An alternative template was created for this investigation. The template was initially tested on 60 patients and then revised. On the final template, patients were asked about intake, dosage, indication and effect of OTC drugs consumed within 24 hours prior to hospitalisation. The need for approval by the regional ethics committee was waived by the committee.

Adult patients aged 15 years and older were includ-

ORIGINAL ARTICLE

1) Department of Oncology, Herlev Hospital
2) Department of Emergency Medicine, South-West Jutland Hospital

Dan Med J
2014;61(2):A4789



ed. The following exclusion criteria were used: 1) admitted from the emergency department where the chart template was not available, 2) admitted unconscious or in a state that made an interview impossible, 3) admitted in a condition in which medical history was secondary to acute treatment, 4) admitted due to an overdose of OTC drugs which could compromise data.

A two-week period was considered adequate to include approximately 200 patients. This sample size was chosen as the few studies that are somewhat comparable to this have had populations ranging from 138 to 492 patients [1-5] with the most similar studies having 200 [1] and 138 patients [2], respectively.

For the purpose of this study, OTC drugs are defined as all non-prescription medicine including herbal medicine, vitamins and supplements [5]. The registered OTC drugs are classified according to ATC codes and recommended dosages are defined according to pro.medicin.dk, which contains descriptions of all human medical products in Denmark [13].

Data will be presented descriptively as median (interquartile range (IQR)) or proportions as appropriate.

Trial registration: not relevant.

RESULTS

There were a total of 349 admissions (100%). Of these,

237 were medical patients (68%) and 112 were to the cardiology service (32%). We identified 188 completed chart templates (54%).

Analysing the usable chart templates, we found that age ranged from 15 to 94 years (median 70 years, (IQR 57-78)) and 98 patients were male (52%). A notification on OTC use was made on 165 chart templates (88%), and 43 patients had reported taking one/more OTC drugs (26%) (Figure 1).

The 43 patients had used a total of 22 different OTC drugs divided on 55 consumptions and 17 different indications (Table 1, Figure 2 and Figure 3). The patients who had taken more than one drug are mentioned in all the ATC groups of the involved drugs. The consumed drugs are referred to by their generic name. For detailed information about consumption and indication related to each OTC drug, please refer to Table 1. Figure 2 shows dosage and effect related to the indication and Figure 3 shows the effect of the intake related to dosage.

Approximately one fourth of the admitted patients had a use of OTC drugs prior to hospitalisation (26%). The most widely used type of OTC drug in this study was analgesics (74%), either alone (56%) or in combination with other drugs (19%).

A total of 26 patients felt an effect of the OTC drugs (60%). The majority had taken OTC drugs on a relevant indication (88%). About half had taken the drugs in a recommended dosage (51%). The most common indication was pain, which was also the symptom that most patients felt a positive effect against. With regard to the other indications, there was a positive effect in half of the cases.

There was no difference in the consumption of OTC drugs with respect to gender and age. We did not identify admissions due to side-effects among the included patients.

DISCUSSION

The number of available OTC drugs and their use is increasing [6, 7]. Several articles have expressed their concern about the possible harmful side-effects [2, 9] and the interactions [7, 10] that can occur when using OTC drugs and prescription medicine simultaneously, especially if the consumers are unaware of the possible consequences [2, 7, 10].

With regard to the amount of patients who had an intake prior to hospitalisation, earlier studies have shown a use ranging from 17% to 67%, but none focused on the consumption of OTC drugs just before hospitalisation [1-6]. These studies are either early (conducted > 10 years ago) [2-4, 6], focus solely on the elderly [2, 5], or investigate the consumption of OTC drugs at a random period for a given household [3, 5, 6]. The most closely related studies looked prospectively at the consumption of OTC drugs prior to and during hospitalisation.

tion by studying medical charts [1] and at the consumption in the year before hospitalisation of the elderly [2]. These studies found that 67% of 200 persons used OTC drugs daily, that the most widely used drugs were analgesics [1] and that 32% of 138 elderly persons used OTC drugs [2].

We found analgesics to be the most widely used OTC drug which is consistent with earlier findings [1, 4, 7, 10, 11].

Most of the admitted patients had consumed OTC drugs on a relevant indication which is also consistent with earlier findings [2, 7].

When looking at the self-reported effect, results are scarce. Furthermore, several patients answered "health reasons" when asked about the indication, which is a hard if not impossible to measure when evaluating the effect. Therefore, these results are to be interpreted cautiously.

Our cohort was relatively old (median: 70 years) so we would have expected a higher use of OTC drugs when comparing with earlier findings [2, 5]. However, we only investigated the use 24 hours prior to hospitalisation, which may explain the difference.

It is a positive finding that many patients do take the OTC drugs relevantly and as recommended, but



The use of over-the-counter drugs is increasing and can potentially interfere with the initial diagnosis and treatment if not properly investigated.

health-care personnel needs to be informed about the intake and it needs to be registered. Several studies have shown that this does not occur and that neither the doctors nor patients are aware of this [1, 2, 4]. This large and generally uninformed usage leaves a potential risk of malpractice as well as unforeseen interactions with prescription medicine [11]. A relevant, but unknown consumption of OTC drugs may interfere with investigations and treatments. Therefore, a high level of information is crucial to optimise the process of hospitalisation that starts with the initial findings through



TABLE 1

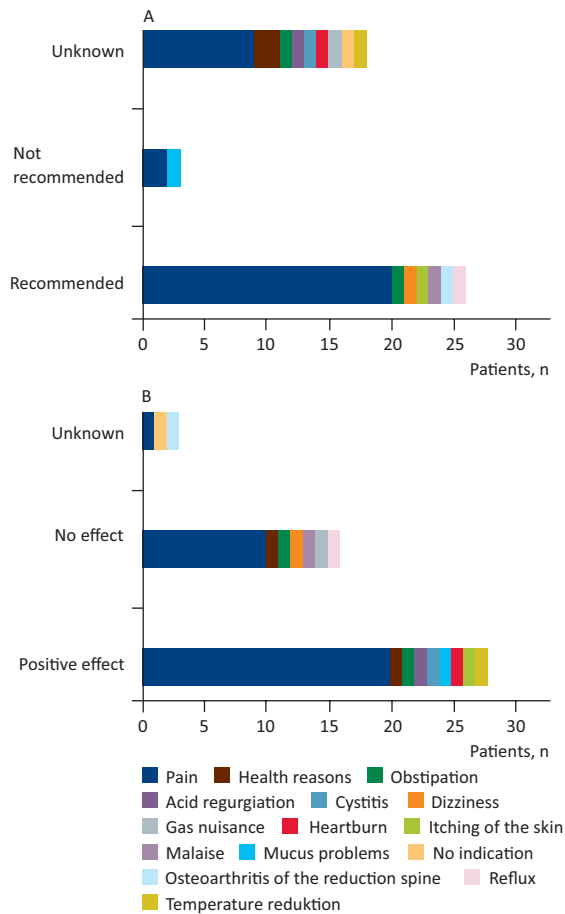
ATC code [8 ATC groups]	Subgroup [10 subgroups]	Generic drug name [22 drugs]	Amount [55 consumptions]	Indication (n) [17 indications]	Overview of consumed over-the-counter drugs.
A02: Drugs for acid-related disorders	A02AA04	Magnesium oxide	1	Constipation	
	A02AD01	Aluminum aminoacetate and magnesium oxide	1	Heartburn	
	A02AH	Antacid	1	Acid regurgitation	
	A02BC03	Lansoprazole ^a	1	Reflux	
A06: Laxatives	A06AD11	Lactulose ^a	1	Constipation	
M01: Antiinflammatory and antirheumatic products	M01A	Ibuprofen ^a	9	Pain (8), malaise (1)	
	M01AX05	Glucosamine	1	Osteoarthritis of the spine	
N02: Analgesics	N02BA51	Acetylsalicylic acid with codeine	1	Pain	
	N02BE	Paracetamol ^a	28	Pain (26), dizziness (1), temperature reduction (1)	
R05: Cough and cold preparations	R05CB01	Acetylcysteine	1	Mucus problems	
R06: Antihistamines for systemic use	R06AE07	Cetirizine ^a	1	Itching of the skin	
Herbal medicine/supplements/vitamins		Fish oil ^a	2	Health reasons (2)	
		Vitamin 50+ ^a	2	Health reasons (1), unknown (1)	
		Calcium with vitamin D ^a	1	Health reasons	
		Garlic pill ^a	1	Health reasons	
		Cranberry capsule ^a	1	Cystitis	
		Lactocare ^a	1	Gas nuisance	
Unknown	?	?	1	Pain	

ATC = Anatomical Therapeutic Chemical.

a) ≥ 2 drugs taken simultaneously by the same patient.

FIGURE 2

A. Dosage and B. effect.

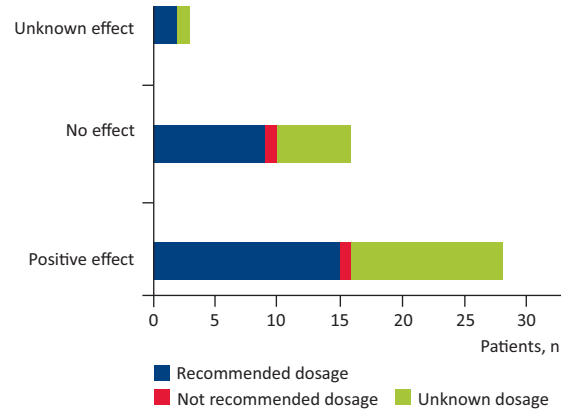


questioning and examination, which lead to decisions about treatment.

Our study has limitations. The relatively low number of chart templates that were completed and included in the study (54%) increases the risk of selection bias and increases the uncertainty about the exact use of OTC drugs. There is also a risk that the admitted patients do not properly remember their medicines and intake, which can cause recall bias. The reasons for the low number of completed chart templates may be several. The physicians admitting the patients do not normally ask about the use of OTC drugs and were not used to the modified chart template being used. The medical admission can be very busy and often takes place in stressful conditions which may have meant that the most crucial information and investigations were prioritised. When assessing our results, it is important to be aware of these limitations. We did not investigate if the consumed OTC drugs were prescribed by a doctor. Nor did we investigate if the consumed drugs had been con-

FIGURE 3

Effect related to dosage.



sumed on a regular basis for a long period of time prior to hospitalisation or as a consequence of the malaise and illness leading to the admission. Finally, our study did not investigate patient knowledge about possible consequences of the use. Further studies should consider investigating these conditions.

CONCLUSION

To our knowledge, this is the only study of its kind that has investigated the intake of OTC drugs 24 hours prior to hospitalisation as well as the effect of the taken drugs on patients of all ages. A fourth of the admitted patients had used OTC drugs and half of these had taken the medicine on relevant indications and in recommended dosages. About half the patients had a positive effect of the use and mostly against pain symptoms, but these results are limited. Pain was the most common indication and analgesics the most widely used OTC drug. Our results are consistent with earlier findings. When considering possible side-effect and medicine interactions at admission of patients, the use of OTC drugs is extremely important to consider. Increased focus on the use of OTC drugs may possible lead to fewer errors and an improved initial treatment.

CORRESPONDENCE: Magnus Pedersen, Onkologisk Afdeling, Herlev Hospital, Herlev Ringvej 75, 2730 Herlev, Denmark.
E-mail: magnuspedersen84@gmail.com

ACCEPTED: 18 December 2013

CONFLICTS OF INTEREST: none. Disclosure forms provided by the authors are available with the full text of this article at www.danmedj.dk.

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