Characteristics of doctor-shoppers: a systematic literature review

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ABSTRACT

Objective: Doctor-shopping has significant consequences for patients and payers and can indicate misuse of drugs, polypharmacy, less continuity of care, and increased medical expenses. This study reviewed the literature describing doctor-shoppers in the adult population.

Methods: A systematic literature review was performed in PubMed and supplemented by a Google search of grey literature. Overall, 2885 records were identified; 43 papers served as a source of definition of a doctor-shopper, disease, treatment, patient characteristics, patient special needs, country.

Results: Definitions of doctor-shopping were heterogeneous. Overall, 40% of studies examined the use of opioids, antidepressants, or psychoactive drugs, while the others focused on chronic or frequent diseases. Most studies were conducted in countries with easy access to healthcare resources (USA, France, Taiwan, Hong Kong). The prevalence of doctor-shopping ranged from 0.5% among opioid users in the USA to 25% of patients registered at general practices in Japan. Comorbidities, active substance abuse, greater distance from healthcare facility, younger age, longer disease and poor patient satisfaction increased doctor-shopping.

Conclusions: Knowing the characteristics of doctor-shoppers may help identify such patients and reduce the associated waste of medical resources, but concerns about the misuse of drugs or healthcare resources should not prevent proper disease management.

Introduction

Doctor-shopping involves visiting multiple doctors with the same health problem and is often observed in outpatient clinics. It has significant consequences for patients and payers, because multiple consultations and overlapping prescriptions are associated with drug misuse, polypharmacy, and increased medical expenses. Changing doctors for the same illness episode without a referral and a link to a history of previous treatment reduces healthcare providers' ability to ensure effective and efficient treatment [1–3]. Also, rising expectations of receiving high-quality healthcare have been reported to have an impact on the patient–doctor relationship and to contribute to a switch of doctor [4,5].

On one hand, patients are entitled to seek high-quality healthcare, but on the other hand, excessive searching for a second opinion contributes to increased costs of treatment and reduces continuity of care. There are many reasons why patients engage in doctor-shopping. Reports from the literature highlight the importance of factors affecting accessibility to healthcare facilities, such as location, opening hours, and waiting times [6–8]. Patients visit more doctors when they have a chronic disease or a drug addiction and their health problem remains unresolved despite receiving treatment [9–11]. Among factors that reduce doctor-shopping are a proper diagnosis, high patient satisfaction and a good patient–doctor relationship [12,13].

Extensive studies of doctor-shopping in a broad population of patients have not been published in the literature. There is still an ongoing debate among researchers on definitions used to measure this phenomenon and on how to evaluate its impact on patient well-being and healthcare resource use. We conducted this study in order to improve our knowledge of doctor-shopping and to focus the attention of healthcare providers on its reasons and consequences.

Objective

The aim of this study was to review the literature describing doctor-shoppers in the adult population and to identify factors associated with doctor-shopping behaviour.

Methods

A systematic literature review was performed in PubMed and supplemented by a Google search of
grey literature. The search in PubMed was run on the 28 May 2018. No restrictions regarding timeframe and geographical scope were applied. Eligibility criteria were defined according to the PICOS approach and are presented in Table 1. A first reviewer screened records and abstracts as well as selected studies for qualitative analysis and extracted data from selected publications. Doubtful cases were discussed with a second reviewer, and discrepancies were resolved by consensus. The electronic search strategy is presented in Table 2. The following data were extracted: definition of doctor-shopper, disease, treatment, patient characteristics, doctor-shopping rate, special patient needs, and country.

**Results**

Overall, 2885 records were identified in PubMed and 48 in the grey literature, out of which 43 were included in the qualitative synthesis. A PRISMA flow diagram of study selection is shown in Figure 1.

### Table 1. Inclusion and exclusion criteria.

| PICO                  | Inclusion criteria                                                                 | Exclusion criteria |
|-----------------------|------------------------------------------------------------------------------------|-------------------|
| Population            | Adults; patients with any disease in outpatient or inpatient settings.              | –                 |
| Intervention          | Any intervention or diagnostic procedure.                                          | –                 |
| Comparator            | None required.                                                                     | –                 |
| Outcome               | Doctor switch.                                                                     | –                 |
| Study design          | Cohort study; RCT; case report; abstract; database analysis.                       | Review; letter to the editor; editorial; opinion. |

### Table 2. Electronic search strategy in PubMed.

| ID   | Search terms                                  | Number of PubMed hits |
|------|-----------------------------------------------|-----------------------|
| #1   | Doctor shopping[Text Word]                    | 153                   |
| #2   | Doctor shopper[Text Word]                     | 8                     |
| #3   | Physician shopping[Text Word]                 | 2                     |
| #4   | Physician shopper[Text Word]                  | 28                    |
| #5   | Double doctoring[Text Word]                   | 4                     |
| #6   | Drug seeking patient[Text Word]               | 10                    |
| #7   | (physician) AND switch*                       | 2514                  |
| #8   | (doctor) AND switch*                          | 1959                  |
| #9   | #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 | 2837                  |

![Figure 1. PRISMA flow diagram.](image)
Definitions of doctor-shopping were heterogeneous. The type of the definition depended mostly on the drug and disease studied and the type of source data used in each specific study. The most consistent definitions were used in studies on drug misuse, especially opioids, in which researchers retrospectively evaluated prescriptions using IMS prescription databases or insurance databases. These studies were based on calculations of daily dose that enabled detection of drug overdosing and monitoring the numbers of prescriptions written by different doctors [11,14–19]. Some studies also included information on the number of pharmacies involved [20–25]. Clinical trials and surveys used definitions based on the number of visits during the same illness episode or for the same, often chronic, condition without or within a specified timeframe and without a professional referral. In studies enrolling patients with chronic conditions such as diabetes [7], eye floaters [26], or nephrolithiasis [9], the definition of doctor-shopping specified a higher number of visits, whereas in cases of urgent conditions or infections, definitions specified a timeframe and were, for example, limited to one day [27] or to the same illness episode [6,10,12,28–34]. Studies focusing on the evaluation of doctor-shopping in general medicine or primary doctor facilities had longer timeframes of 1 year [35,36], 2 years [37], or even 3 years [38]. Definitions of doctor-shopping in the studies identified are presented in Table 3.

Geographical scope of studies on doctor shopping
Overall, 17 (39.5%) studies were conducted in the USA, out of which 9 were based solely on retrospective data from large databases [9,11,13,15,19,23–25,36–44]. Another 8 (18.6%) studies were conducted in France [16–18,20–22,30,45], 7 (16.3%) in Taiwan [14,26–28,34,46,47], 5 (11.6%) in Hong Kong [6,8,10,29,33], and 4 (9.3%) in Japan [12,31,32,48]. There was a one study from Australia and one from India [7,35]. The studies were performed in countries where patients can visit medical institutions freely under the national health system and/or have access to all institutions and specialists without a referral. The distribution of countries studied is presented in Figure 2.

Rate of doctor-shopping
Overall, 16 (40%) of studies examined the use of strong, addictive drugs such as opioids, antidepressants, or psychoactive drugs, while the others included patients with chronic (e.g., diabetes, cancer, overactive bladder) or frequent disease (e.g., upper respiratory tract infections). The prevalence of doctor-shopping ranged from 0.5% among opioid users in the USA to 38% of patients registered at general practices in Hong Kong. Examples of rates of doctor-shopping across studies that used different methodologies are shown in Table 4. The rate of doctor-shopping varied considerably depending on the disease, the drug studied, and the type of medical service used. The most reliable precise data were provided for database studies on opioid use. These studies also had the lowest risk bias, because they enabled prescriptions and sales of the drugs prescribed to be tracked in retail prescription databases. Studies including patients registered at outpatient and specialist clinics were mostly based on questionnaires that used different timeframes, small samples, and lacked information about people who refused to participate.

Factors affecting the rate of doctor-shopping
Risk factors for and protective factors against doctor-shopping have been evaluated in multiple studies. Factors associated with doctor-shopping included predominantly the nature of the disease and comorbidities. Both types of doctor-shoppers (opioid users and patients registered at general and primary doctor practices) shared the same risk factors, such as the presence of mental health disorders, alcohol dependence, and a history of alcohol and active substance misuse disorders [9,22,23,30,31,36,40]. Doctor-shoppers were younger and had a lower socioeconomic status than non-doctor-shoppers, particularly among people who misused opioids [9,20,21,23]. Patients with chronic diseases, multiple comorbidities, and persistent symptoms were more likely to visit a larger number of healthcare providers [10,14,37,41,46,47,48]. A good relationship with a doctor and positive experiences were factors that helped to prevent doctor-shopping [33,38]. Individuals who consumed opioids and drugs for the treatment of attention deficit hyperactivity disorder (ADHD) and engaged in doctor-shopping were more likely to pay cash and to travel great distances to doctor facilities or pharmacies [19,24]. Factors contributing to the development of doctor-shopping are summarised in Table 5.

Discussion
This systematic review of the literature showed that doctor-shopping is a common phenomenon. The rate of this phenomenon varies among patient populations with different health problems. For opioids, it can be as low as 0.45% among the broad population that uses opioids, or as high as 24% among patients with a specific reason for opioid use, such as recent surgery.
for nephrolithiasis. The highest rates were reported for multiple visits to doctors during the same illness episode and were found to involve as many as 38% of patients registered at outpatient clinics. Multiple factors were identified as potential risk factors for doctor-shopping. The most common were multiple comorbid conditions including mental disorders, unresolved health problems, history of drug and other substance misuse, younger age, and poor socioeconomic status. Factors such as a good patient–doctor relationship and

| Reference        | Definition                                                                 | Type of study                  | Disease/drug                                                                 |
|------------------|---------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------------------|
| Cepeda 2013 [24]| >1 prescription by ≥2 different prescribers with ≥1 day of overlap and filled at ≥3 pharmacies. | Retail prescription database | Opioids (tapentadol IR, oxycodone)                                           |
| Cepeda 2013 [25]| >1 prescription by ≥2 different prescribers with ≥1 day of overlap and filled at ≥3 pharmacies. | Retail prescription database | Opioids                                                                      |
| Cepeda 2015 [23]| >1 prescription by ≥2 different prescribers with ≥1 day of overlap and filled at ≥3 pharmacies. | Retail prescription database | Opioids                                                                      |
| Chenaf 2016 [20,21]| >1 prescription by ≥2 different prescribers with ≥1 day of overlap and filled at ≥3 pharmacies. | Retail prescription database | Opioids                                                                      |
| Delorme 2016 [22]| >1 prescription by ≥2 different prescribers with ≥1 day of overlap and filled at ≥3 pharmacies. | Retail prescription database | Opioids                                                                      |
| Lu 2015 [14]    | >2 prescriptions by different doctors within ≥1 day overlapping in the duration of therapy. | Insurance database            | Insomnia, zolpidem                                                          |
| McDonald 2014 [15]| >2 prescriptions by different doctors within ≥1 day overlapping in the duration of therapy. | Insurance database            | Opioids                                                                      |
| Nordmann 2013 [16]| >1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Heroin-related overdose                                                      |
| Ponte 2018 [11] | >1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Narcotics, orthopaedic trauma                                               |
| Pradel 2010 [17] | >1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Benzodiazepines                                                             |
| Rouby 2012 [18] | >1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Tianeptine                                                                  |
| Simeone 2017 [19]| >1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Opioids                                                                      |
| Martyres 2004 [39]| ≥1 prescription without specified dose overlap or number of prescribers. | Prospective study + database study | Heroin-related overdose                                                      |
| Morris 2014 [40]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Narcotics                                                                   |
| Okumura 2016 [48]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Benzodiazepines                                                             |
| Pradel 2004 [45]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Diabetes                                                                     |
| Agrawal 2016 [7]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Pharmacological therapy                                                     |
| Chang 2012 [28]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Overweight                                                                   |
| Feng 2013 [35]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Overweight                                                                   |
| Gudzune 2014 [13]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Overweight                                                                   |
| Gudzune 2013 [37]| ≥1 prescription without specified dose overlap or number of prescribers. | Questionnaire                  | Overweight                                                                   |
| Kappa 2016 [9]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Leug 2006 [29]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Leug 2003 [6]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Lo 1994 [10]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Norton 2011 [30]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Ohira 2012 [12]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Safran 2001 [38]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Sato 1999 [31]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Sato 1995 [32]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Siu 2014 [33]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Sorbоро 2003 [36]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Tseng 2015 [26]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Wang 2010 [34]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Yeung 2004 [8]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Wu 2014 [27]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Lee 2011 [41]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Stogner 2014 [42]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Zhang 2017 [43]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Worley 2014 [44]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |
| Hsieh 2013 [47]| ≥1 prescription without specified dose overlap or number of prescribers. | Database study                  | Overweight                                                                   |

ADHD, attention deficit hyperactivity disorder; EGB, Echantillon Generaliste des Beneficiaires; GHI, general health insurance; IR, immediate release.
a positive patient experience may reduce the rate of doctor-shopping. 

Doctor-shopping can signal problems of healthcare system and drug overuse resulting in worsening of health condition of doctor-shoppers. A negative impact of polypharmacy on health has been well documented in the literature [49]. Also, changing doctors reduces continuity of care which can translate into worse disease management and increased waiting times as well as increased cost of treatment for both the patients and payers [50]. Another reason for analysing the phenomenon of doctor shopping is drug abuse. According to police and regulatory agency perceptions, about 40% of prescription drug diversions were sourced from doctor-shopping; however, many other mechanisms such as thefts, forgeries, smuggling, insurance frauds, internet purchase, in-transit losses, and physician ‘pill-mills’ were also identified [51].

The extent and interest in analysis doctor-shopping depend on the healthcare system structure. The country where the study was conducted is an important factor that may influence the rate of doctor-shopping. In some countries, e.g., in Taiwan, patients have access without restrictions to all institutions and specialists [52]. Similarly, in Japan patients can visit medical institutions freely under the national health system [12]. In such cases, the absence of a mandatory attempt to treat the condition by a primary care physician (gate keeper) before a referee to a specialist may increase doctor-shopping behaviour [47]. In France, visiting another general practitioner requires a

| Disease/drug                  | Reference/region          | Sample size | Rate of doctor-shopping                                      |
|------------------------------|----------------------------|-------------|---------------------------------------------------------------|
| Stimulants, ADHD             | Cepeda 2015 [23] USA       | 4,402,464   | 0.45% any type of shopping behaviour                          |
|                              |                            |             | 0.05% heavy shopping behaviour                                |
| Opioids                      | Cepeda 2013 [25] USA       | 10,910,451  | 0.7% any type of shopping behaviour                          |
|                              |                            |             | 0.1% heavy shopping behaviour                                 |
| Opioids, non-cancer pain     | Chenaf 2016 [20] France    | 1958        | 4.03% for codeine                                             |
|                              |                            |             | 0.17% for diuretics                                           |
|                              |                            |             | 8.45% for buprenorphine maintenance treatment                |
| Opioids                      | Delorme 2016 [22] France   | 2043        | 8.4% for high dosage buprenorphine                           |
|                              |                            |             | 0% for methadone                                              |
|                              |                            |             | 0.2% for diuretics                                           |
| Opioids, nephrolithiasis     | Kappa 2016 [9] USA         | 200         | 24% received narcotics from ≥1 provider after surgery        |
| Zolpidem, insomnia           | Lu 2015 [14] Taiwan USA    | 6947        | 23.78% for zolpidem                                          |
| General population           | Lee 2011 [41] USA          | 2998        | 14% of participants whose doctor refused to prescribe a drug switched doctor |
| Patients of specialist clinics | Leung 2003 [6] Hong Kong   | 6495        | 26.4% of population requiring specialist care                |
| Government outpatient departments | Lo 1994 [10] Hong Kong     | 1387        | 36%-38% during single illness episode                         |
| General medicine             | Sato 1995 [32] Japan       | 758         | 24.4% visited >1 medical facility with the same complaint    |
| Eye floaters                 | Tseng 2015 [26] Japan      | 134         | 35% visited >1 ophthalmologist                               |
small additional payment; however, drugs are prescribed for a shorter period (a maximum of 30 days) compared to other countries [16,18]. In the UK, patients have more difficulties with changing doctors, because many general practitioners do not accept patients from outside their own catchment area. Additionally, it is more difficult to access specialist care in the UK. Unfortunately, no studies from the UK were identified, so an evaluation of the impact of accessibility to healthcare on the rate of doctor-shopping was not possible.

Heterogeneity in the definitions of the doctor-shopping was linked to heterogeneity in the data sources. Studies using prescription databases or insurance claims assessed the number of overlapping prescriptions, whereas studies using surveys as a source of information evaluated the number of visits to doctors. This organisation of research does not give a full picture of the problems associated with doctor-shopping. The analysis of overlapping prescriptions provides information only about the misuse of selected drugs, but leaves problems such as polypharmacy, comorbidities, and effectiveness of treatment of the UK problem undisputed. Individuals who misuse certain agents from different classes, e.g., opioids, stimulants, and benzodiazepines, might not be identified as doctor-shoppers in these analyses.

The main limitation of surveys is that participants who complete questionnaires may conceal information about addictions, drug misuse or a true reason for a doctor-shopping. The limitation of claims-based study, although giving accurate information, includes possible discrepancies between claims and patient behaviours; claims for prescriptions do not always indicate that the medication was taken as prescribed.

Prescription drug monitoring programmes that aim to reduce drug abuse report that the number of overall drug prescriptions per person is lower when a patient is on a single schedule in comparison to the number of prescriptions filled for individuals prescribed drugs in multiple schedules [53,54]. This finding is intuitive, but highlights the possible risks associated with polypharmacy, which is often rooted in a greater number of comorbidities. The presence of multiple comorbidities, both mental and somatic, was identified as a risk factor for doctor-shopping [9,23,31,36,48].

Little is known on the effective long-term initiatives to reduce doctor-shopping especially in terms of eliminating drug interactions, errors in dosing and polypharmacy. Programs based on the promotion of medication reviews and education of physicians and patients were found to be effective. However, they face problems with the identification of patients at risk for polypharmacy or drug abuse [55]. Computerized physician order entry, clinical decision support, and electronic prescriptions systems showed the ability to diminish medication errors in specific therapeutic areas in monitored patients [56,57]. Introduction of electronic insurance cards with health information and medication history would offer benefits when introduced nationally; however, such solutions require investments in infrastructure [58]. Moreover, Taiwanese experience shows that only 73% of physicians review their prescriptions in response to displayed alerts [59]. The obstacles mentioned above highlight challenges in the development of useful, easy to use and cheap solution for optimising

| Disease/drug | Reference | Risk factors |
|--------------|-----------|--------------|
| Opioid users | Cepeda 2015 [23] | Presence of mental health disorders; alcohol dependence; low-income status. |
| Pain | Chen 2016 [20] | Presence of mental health disorders; history of opioid and substance misuse disorders; doctor-shoppers were of younger age and lower income status. |
| Post-surgery due to nephrolithiasis; opioids. | Kappa 2016 [9] | History of mental illness; prior stone procedures; history of preoperative narcotic misuse; younger age; lower income status; less educated. |
| Orthopaedic trauma | Morris 2014 [40] | History of preoperative narcotic misuse; concomitant alcohol misuse; less educated. |
| Benzodiazepines | Okumura 2016 [48] | Multiple chronic conditions. |
| Insomnia | Lu 2015 [14] | Greater number of comorbidities; chronic diseases; younger age; high socioeconomic status. |
| Hepatocellular carcinoma | Hsieh 2013 [47] | Hepatitis B carriers; recurrence of hepatocellular carcinoma; younger age; female. |
| Overactive bladder | Stu 2014 [33] | Negative treatment experiences. |
| Overweight | Gudzune 2013 [37] | Greater number of comorbidities; mental health diagnosis; diabetes mellitus diagnosis. |
| TCM users | Lin 2015 [46] | Presence of catastrophic illness; history of hospital admission; acupuncture; trauma; dislocation; low income. |
| Outpatient clinic | Lo 1994 [10] | Presence of chronic or acute conditions; persistent symptoms. |
| Primary care | Norton 2011 [30] | Presence of psychiatric and mental disorders. |
| Primary care | Safran 2001 [38] | Poor doctor–patient relationship. |
| General medicine | Lee 2011 [41] | Presence of cancer and other chronic conditions. |
| General medicine | Sato 1999 [31] | Duration of illness; presence of psychiatric disorders; perceived poor and deteriorating health condition; less educated. |
| General medicine | Sorbero 2003 [36] | Multiple comorbid conditions; history of drug/alcohol misuse; younger age; female. |

TCM, traditional Chinese medicine users.
pharmacological treatment in patients at risk for polypharmacy or drug abuse.

Conclusions
Knowing the characteristics of doctor-shoppers may help identify such patients and reduce the associated waste of medical resources, but concerns about the misuse of drug or healthcare resources should not prevent proper disease management. Further research is needed to cover a wider range of diseases and countries, and to examine the effect of healthcare regulations on doctor-shopping prevalence and costs.

Disclosure statement
No potential conflict of interest was reported by the authors.

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