

Social Determinants Influence Physician's Behavior in Prescribing Antibiotics: Factors and Consequences

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ABSTRACT

Background: Several social determinants other than scientific knowledge can influence the prescribing behavior of physicians.

Objective: To conduct a literature review on available data to identify social determinants influence physician's behavior in prescribing antibiotics.

Data Source: A literature search was performed using 'PubMed' to identify studies for inclusion and exclusion criteria. The following search terms were used: 'Social determinants' 'Irrational use' 'Inappropriate Use' 'Inappropriate Prescription' 'Factors' 'Consequences' and 'Antibiotics'.

Results: Thirty studies met the inclusion criteria from 80 search results. A total of 6 social determinants and 20 factors identified. The most frequent social determinants were patients, prescribers, the workplace, caregivers (parents and relatives), and industry and drug regulations.

Conclusion: Our findings showed that several social determinants other than scientific knowledge could influence the prescribing decisions of physicians.

Introduction

Antibiotics are in use since ancient times. An antibiotic is a type of antimicrobial substance active against bacteria. It is the most important type of antimicrobial agent for fighting bacterial infections, and antibiotic medications are widely used in the treatment and prevention of such infections. They may either kill or inhibit the growth of bacteria. Antibiotics are not effective against viruses such as common cold or influenza. The drugs that are used to kill or inhibit the growth of viruses are termed antiviral drugs [1]. Antimicrobial agents are among the most commonly prescribed medications around the globe. Good antibiotic prescribing practice (GAPP) means using most effective, least toxic and least costly antibiotic for a precise duration. Prescribing drugs recognized

as a challenging task and an essential practice, which needs to be continuously monitored, assessed and refined accordingly. Moreover, its base is on the understanding of clinical pharmacology principles, knowledge about medicines and particularly experience of the prescriber. According to World Health Organization (WHO), approximately 80% of antibiotics are used for the primary care but their inappropriate use causes health hazards [2-4].

Physicians are the primary decision makers in healthcare settings. However, the prescribing decision of physicians is the result of a multitude of intertwined factors and several social determinants involved in it [5-7]. Determining the social determinants that influence physicians' prescribing behavior and decision are the

most important input to develop practice guidelines and healthcare policy. Thus, the purpose of this article is to determine the social determinants and highlight the factors that influence physicians' behavior in prescribing antibiotics. Therefore, highlighting social determinants and factors that influence physicians' prescribing behavior will help to devise a structured way to rationalize patient care process.

Methods

Search Strategy

Search strategy and selection criteria data for this review identified by structured review of 'PubMed'. The following search terms were used: 'Social Determinants' 'Irrational use' 'Inappropriate Use' 'Inappropriate Prescription' 'Factors' 'Consequences' and 'Antibiotics'. All papers reviewed were in the English language. All studies screened based on titles and abstracts to exclude irrelevant articles and the remaining full-text reports further examined to determine whether they met the inclusion criteria.

Eligibility and Inclusion Criteria

Following studies were eligible if reporting: 1) antibiotics use 2) irrational use 3) inappropriate prescription 4) social determinants 5) factors and 6) consequences. The major inclusion criteria were: 1) studies should be original articles 2) the full text providing enough information 3) the studies should be in English, and 4) published from 2000 to 2020.

Data Items

We reviewed the following information in the full-text records: authors and year of publication, country where study conducted, study design, sample size and population, social determinants, factors and consequences.

Validity of Selected Articles

The full text articles were appraise based on the following criteria:

1. Did the study have sound objectives?
2. Did the study mention social determinants influencing prescribing decision?
3. Did the study mention factors influencing prescribing decision?
4. Did the study discuss consequences of irrational prescribing?

5. Did the study describe data sources clearly?
6. Did the study use reliable methods?

Results

The electronic search based on the screening of title yielded a total of 80 reports from PubMed. The study screening process presented in Figure 1. After assessing the full text articles for eligibility, 17 articles identified eligible for discussion out of 80. In the first screening process, 50 articles excluded because those did not relate to factors, irrational use, irrational prescription, and consequences. Five review articles also excluded including mini-reviews. In the next process of screening further 13 papers excluded which did not relate to irrational use, irrational prescription social determinants, factors and consequences. The study selection process illustrated in Figure 1. All the included articles had clear aims and objectives, mentioning social determinants and factors that influence physicians' prescribing behavior clearly, and describing data sources. A total of 6 social determinants and 20 factors identified. Table 1 summarizes the social determinants and factors influence physicians' behavior in prescribing antibiotics.

Table 1: Social determinants and factors influence physicians' behavior in prescribing antibiotics.

Social determinants	Factors
Patients -	Drug misinformation Patient demands
Prescribers -	Lack of education and training Inappropriate role models Lack drug information Generalization of limited experience Misleading beliefs about drugs efficacy
Workplace -	Heavy patient load Pressure to prescribe Lack of adequate lab capacity Insufficient staffing
Caregivers - (parents, relatives)	Severity of illness Duration of infection Afraid of losing patients
Drug Regulation -	Non-essential drugs available Non-formal prescribers Lack of regulation enforcement
Industry -	Promotional activities Misleading claims

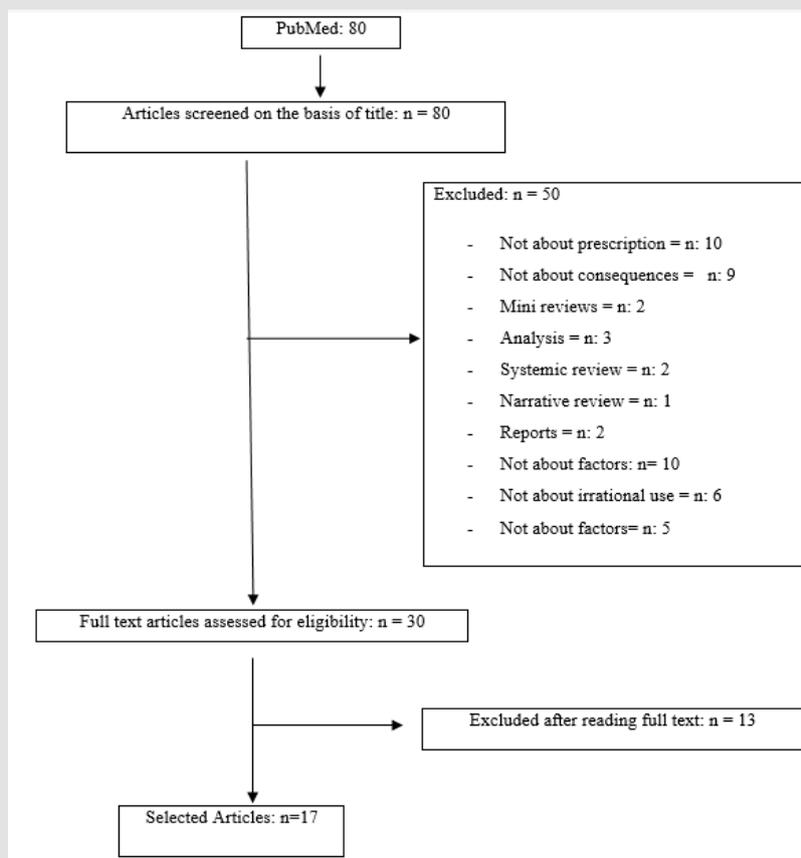


Figure 1: Study selection process.

Discussion

This was a review of the social determinants that influence physicians' behavior in prescribing antibiotics. When patient visit hospitals and clinics, doctors and physicians prescribe the medicine based on the patients' clinical condition. The clinical condition of the patient includes the sign and symptoms, co-morbid conditions and uncertain diagnosis [8,9]. Several social determinants attributed towards physicians' prescribing behavior other than scientific knowledge. The most frequent social determinants include patients, prescribers, workplace, caregivers (parents and relatives), drug regulations and industry. Factors that influence physicians' prescribing behavior in response to these social determinants include patients demands and dissatisfaction, patient misinformation, pressure from patients to prescribe antibiotics regardless of the indication coupled, physicians lack of knowledge and training regarding antibiotics, physicians' non-adherence to treatment guidelines, inappropriate role models, the generalization of limited experience, misleading beliefs about drug efficacy, the burden of work, a load of patients in the workplace, lack of diagnostic facilities, and uncertainty over the diagnosis, insufficient staffing, fear of losing patient from caregivers (parents and relatives), lack of drug regulations, non-essential drugs availability, industrial promotional activities, and financial benefits

for physicians [10-21].

Excessive and inappropriate use of antibiotics is a serious threat to the spread of antibiotic resistant (ABR) bacteria [22]. The consequences of antibiotic overprescribing include delays in proper diagnosis and treatment, reduced drug effects, increased side effects, drug resistance, elimination of sources of medicines, increase out-of-pocket payments, dissemination of misconceptions in the common societal culture, reduced patient confidence in the healthcare system, prolonged disease state and even mortality in chronic diseases such as diabetes, hypertension, epilepsy and neurological disorders. To minimize emergence of ABR and reducing consequences of overprescribing, immediate and effective actions needed to improve use of antibiotics. Providing education at community, healthcare, and individual levels is essential to ensure rational use of antibiotics. Special training programs on antibiotic prescribing should be introduced for medical students, junior doctors and GPs. Additionally, pharmaceutical promotion strategies should be monitored by government and stakeholders, including international organizations [23,24].

This review had some limitations worth mentioning. First, the review included only articles published in the English language. Second, the studies included in the review had a different study design, data collection, and analysis technique.

Conclusion

It is evident from the various studies that several social determinants influence physicians' behavior in prescribing antibiotics other than scientific knowledge. The most frequent social determinants were patients, prescribers, workplace, caregivers (parents and relatives), and industry and drug regulations. The described social determinants need to be tackled with different angles. These findings can be used in policy development to enhance the prescribing behavior of prescribers.

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