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ORIGINAL ARTICLE

Factors influencing GPs' choice between drugs in a therapeutic drug group. A qualitative study

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Abstract

Objective. To explore how GPs choose between drugs in a therapeutic drug group. *Design.* A qualitative study based on semi-structured ethnographic interviews. *Setting and subjects.* General practitioners from the counties of both Funen and West Zealand in Denmark. A total of 15 general practitioners (GPs) were selected with reference to variation in organizational structure, age, and gender. *Main outcome measures.* GPs' description of drug choice in relation to specific patient encounters involving a prescription. *Results.* All informants appeared to consider drug price important as it was a recurring theme during all interviews. External factors outside the GP's control such as governmental regulation on prescribing and the pharmaceutical industry influenced most GPs. Internal factors related to the actual consultation included characteristics of the GP and the patient, drug characteristics, and repeat prescriptions. These factors interact in a non-linear and unpredictable way similar to complex adaptive systems. *Conclusion.* GPs balance both internal and external factors when choosing between analogues. Drug choice is a regulated process in the realm of complex prescribing behaviour with drug costs as a major factor.

Key Words: *Drug choice, drug formularies, family practice, prescription drugs, primary health care, qualitative study*

GPs are responsible for close to 90% of all prescriptions in Denmark [1]. In general, good quality prescribing is associated with the use of a limited number of analogue drugs (drugs with identical effect, but minor difference in chemical substance) [2,3]. Health authorities in many countries have implemented national or regional drug formularies in an attempt to regulate prescribing in primary care and promote rational use of drugs. However, previous studies based on drug prescription data indicate a wide variation in the number of analogues used by GPs in a therapeutic drug class [4–6].

Qualitative studies on prescribing in general practice have previously focused on the general clinical decision-making prior to prescribing a drug or doctors' principles regarding choice of action [7–11]. However, there is a lack of knowledge about how GPs choose between analogues in a therapeutic drug group when they have decided to treat with medicine.

The aim of the study was to explore how GPs choose between drugs in a therapeutic drug group and how they balance both internal (situational conditions related to the specific consultation) and external factors (factors outside the practice)

Understanding how GPs choose between analogues in a therapeutic drug group might help future intervention strategies aimed at rational prescribing.

- GPs consider price an important factor when they choose drugs in a therapeutic drug group.
- GPs balance both external factors outside their control and internal factors related to the consultation when choosing an analogue.
- Several factors interact in unpredictable and non-linear ways similar to complex adaptive systems.

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Material and methods

The study took place in the Counties of Funen and West Zealand in Denmark between August 2004 and October 2005. A total of 24 GPs were invited by e-mail to participate. Sixteen GPs accepted the invitation and 15 were interviewed.

We selected the participating GPs according to the method of purposeful sampling to obtain variation in relation to practice (single-handed or group practice), gender and age [12]. Of the 15 interviewed, 7 were men and 8 women, 4 worked in single-handed practices, 4 in practices with 2 doctors and 7 in practices with 3–5 doctors, 9 had practised for 5 or less years, 2 for 6–10 years, 2 for 11–20 years and 2 for more than 20 years.

Non-responding GPs did not appear to be different with regard to these characteristics. Semi-structured ethnographic interviews were carried out by a physician and an anthropologist familiar with the ethnographic interview but with no prior knowledge of medical research. The informants were interviewed on five specific recent prescriptions selected from their patient records. They were informed about our interests in their prescribing habits for new users and not their ongoing treatment for patients already in treatment.

The interviews focused on specific prescriptions in order to explore GPs' un-reflected prescribing practice more than their prescribing attitudes in general. We used open descriptive questions to explore the field. Structural in-depth questions were asked to explore the structure within the themes (domains) and to develop new themes. Contrast questions clarified differences within prescriptions [13].

All interviews were audiotaped and transcribed verbatim and in extenso by AB and CM. Transcriptions were analysed in accordance with the sociological phenomenological approach of Schutz [14] and systematic ethnographic domain analyses were performed [13]. The analysis was carried out using complexity theory as a framework for interpretation [15].

Results

Themes that were central to the GPs' prescriptions were:

1. price;
2. external factors;
3. internal factors;
4. the complexity of prescribing.

1. Price

Drug price was the only factor that could be classified both as an internal and as an external factor.

All GPs emphasized the importance of the price of the drug. Governmental cost-reducing initiatives were given as an explanation for the focus on drug prices and most GPs had received information on how to achieve an economic prescribing behaviour. One doctor said: "I feel I am a representative of my patients, but I also feel an obligation to act responsibly when it comes to health economics" (GP 3). Prescribing for different socioeconomic groups was a concern for one informant. He chose a cheap analogue and prescribed a smaller quantity when he knew that the patient had a low income. Most GPs would comply with patients' request for the cheapest drug possible, because unaffordable drug prices were perceived as a reason for non-compliance. However, all GPs mentioned that costs should be borne in mind when prescribing drugs. Few informants stated that cost was secondary to clinical effectiveness and safety. Prescribing habits were influenced by GPs' actual knowledge of the drug price. Some found it difficult to keep up to date on prices, since prices are subject to frequent alterations. Some informants, however, checked prices regularly.

Price as the reason for drug switch was mentioned by some and some used the recommended drug formulary as a guide. Some informants refrained from switching patients from one analogue to a cheaper one because of frequent price changes. One participant said: "It is very difficult, I might switch a patient to the cheapest drug, but after two months the prices have gone up and then we are back where we started" (GP 13). One participant was afraid that he would lose credibility if he changed patients' medicines too often. Another was concerned that patients would be confused.

2. External factors

All GPs accepted some kind of regulation on prescribing and the introduction of a recommended drug formulary was generally accepted. However, only a few informants specified the formulary as the reason for the specific prescriptions that were selected as background for the interview. All informants were asked where they kept the formulary and only two GPs knew where to find it and few used it on a regular basis.

Informants did not perceive drug formularies as a restriction of their freedom to choose drugs. However, most reserved the right to prescribe according

to clinical circumstances. Many of the GPs found drug formularies a great help in the process of choosing a first-line drug. Young GPs in particular felt a need for one general guideline in relation to drugs they were going to prescribe regularly. However, the GPs needed many different guidelines, clinical journals, and drug manuals to obtain knowledge on which drug to choose. Most informants found it desirable and practical to unify scientific knowledge and practical experience into one easy-to-use drug formulary. The main scepticism was that price in guidelines from health authorities would be the main issue and respondents pinpointed that the quality aspect should be a first priority.

Many informants stated that recommendations from the local hospital had a significant impact on their prescribing habits and prescriptions initiated from hospital physicians were rarely changed. Informants emphasized the importance of a joint drug formulary addressed to both primary and secondary healthcare. Young GPs found informal inspiration from senior colleagues or from the hospital where they had recently been employed. Some discussed their prescribing habits with colleagues, but very few had tried to build up a "practice formulary".

Most GPs had regular visits from pharmaceutical sales representatives. Many informants stated that they used sales representatives as a source of information on new drugs. Only one GP mentioned influence of the pharmaceutical industry as the cause of particular prescriptions: "I hand out many instructions for back exercise and they come stamped with a certain company name which has gradually become fixed in my mind" (GP 9). Although some GPs questioned the objectivity of the industry, in general they considered its information to be reasonably accurate, although selective. There was a general acceptance of educational conferences and training courses arranged by the industry. No informants mentioned free gifts, but some found gadgets related to their daily clinic useful. Most informants consigned written material to the waste-paper basket. Only one participant had no collaboration with the industry.

3. Internal factors

Apart from price, GPs balanced the multiple goals of ideal prescribing and their perceptions of patient adherence, expectations, and circumstances.

Patient demands and requests were significant. It was emphasized by some informants that without acceptance from the patient, compliance would decrease. As one participant commented: "We have to respect our patients' requests; we cannot impose something on somebody if we wish them to comply" (GP 11). Some prescriptions were based on negotiation between GPs and their patients.

Previous use of the drug gave the GP a certain "familiarity" with the drug's effectiveness, side effects, and dosage. Some informants stated that this familiarity increased confidence in the process of prescribing and made drug choice less time-consuming. Some informants were themselves treated with some of the drugs and chose to prescribe these particular drugs because they knew them to be effective and with acceptable side effects.

Workload and pressure of time were mentioned by some GPs as a reason for some of their prescriptions, because it was easy to prescribe drugs they were familiar with: "If I need to prescribe at a pinch, if I am in a hurry, I will prescribe what I am familiar with" (GP 9).

The majority of GPs gave the impression that they had a personal "by heart" drug formulary for each therapeutic drug group – a somewhat idiosyncratic individual index including a first-line agent. This first-line drug was selected according to drug characteristics and for analogous drugs price was a significant factor.

Adverse drug effects were a significant issue for most GPs in switching from one to another analogue. Previous experience of adverse effects with a drug played a major role in the selection of a first-line drug and informants' drug choice was highly related to expectancies concerning drug efficiency. Often efficacy was related to their own experience with the drug, using a "trial and error" approach. Some stated that within some therapeutic drug groups perceived differences in effects could influence their first-line drug.

Differences in dose schedule could affect drug choices. In order to obtain compliance it was considered important that drugs should be taken by the patient only a few times a day. It was important for some informants that the drug had full 24-hour coverage. Furthermore, the dispensing method was considered important in the choice of a drug.

4. The complexity of prescribing

Choosing between drugs was neither chaotic nor a structured process. The informants often mentioned several factors as an explanation for their different prescriptions. It was not possible to identify a simple linearity in how the informant chose between analogues. All factors both internal and external interact in an unpredictable way with price as a recurrent factor.

As an example of complexity in prescribing, the following statement from one participant revealed five different factors (personal experience, price, dispensing method, side effects, and trial and error) influencing a GP's choice between drugs in a therapeutic drug group: "I have a lot of patients suffering from longstanding headache with a family history of migraine. The initial drug for these patients will often be the cheapest one. However, my personal experience tells me that these drugs are not always as efficient as some of the more expensive drugs. An example is eletriptane which is a relatively cheap analogue, but migraine sufferers often have nausea and cannot swallow pills with water. Rizatriptan comes as an orally disintegrating, easy to use and generally tolerated by migraine patients. I use rizatriptan myself, and that is probably the main reason why I prefer it. I have tried four different drug samples from different pharmaceutical representatives before ending up with rizatriptan" (GP 11).

Discussion

Analyses of the material indicate that four different types of factors influence the GPs' choice of drug: the price, internal, external factors, and a complex system of factors related to the actual consultation. Whereas the first two are quite straightforward, the last is a combination of factors that operate in a systematic but non-linear manner. In order to analyse this aspect further we use the complexity theory to elaborate the analysis.

Strengths and weaknesses of the study

Studies of clinical decision-making are about people, behaviour, and contexts. They need both quantitative and qualitative approaches to produce both the holistic view and the robust data needed to triangulate and thereby validate collected data. Previous studies on how GPs choose between analogues have mostly been quantitative [4–6]. In concordance with our study, two recent studies considered efficacy, formulary status, and policies restricting drug use to be highly influential in the decision to use one analogue instead of another [16,17].

The validity and meaningfulness of the results obtained depend directly on the observer's skill, discipline, and perspective [14]. In order to avoid the problem related to peer interviewing, interviews were carried out by both a physician and an anthropologist familiar with the phenomenological and ethnographic method [19].

We invited 24 informants by email and 15 were interviewed. The main reason not to participate was lack of time. However, we cannot exclude that these GPs were different from the 15 interviewed GPs.

Sampling ceased when the empirical material crystallized into a meaningful pattern. Qualitative research is conceptual more than numerical and in contrast to quantitative studies the aim is not to be representative. We used criteria by Arksey and Knight to enhance content validity [20]. Purposeful sampling was used to enhance external validity or transferability [12]. In contrast to random sampling, a purposive sample can be as representative as a random sample, especially when the sample size is small [12].

Drug price

Price was a recurrent theme in all interviews and most GPs mentioned drug price as the main reason for choosing their first-line drug. These findings are in contrast to previous studies. Jacoby et al. found that a shift in GPs' attitude towards drug costs is required before cost-effectiveness is incorporated into GPs' prescribing habits [18]. Safavi et al. concluded that although GPs considered drug costs important, most physicians were unaware of prices of drugs they commonly prescribed [21]. In agreement with several studies [22–24], our results emphasized that the political message about increasing drug expenditures and the introduction of local drug formularies have an impact.

It is possible that the informants attached more importance to the price aspect due to the mass media's focus on drug expenditures and health authorities' cost-reducing initiatives. However, we asked about specific prescriptions and not prescribing in general. Analysing the possible discrepancy between good intentions and actual prescribing was beyond the scope of this study, but would be an interesting topic for future research.

Complexity

In most studies prescribing is described as a multifactor process with several factors interacting [7,18]. The present study was in line with these studies. GPs' descriptions of their specific drug choices indicated that several factors interacted in unpredictable and non-linear ways similar to complex adaptive systems. It was not possible to list these factors in order of priority.

Complexity theories have been useful in understanding how different factors influence clinical decision-making in general practice [15,25,26]. According to Miller and colleagues each practice has its own history, initial conditions and comprises

individual agents, such as patients, staff, and physicians, who interact in a way not always predictable, and with the capability to change context for each agent [15,25].

As reported by Plsek and colleagues, Complex Adaptive Systems typically have a low degree of predictability. One system influences and is influenced by other systems, e.g. local health authorities affect general practice and vice versa. Despite low predictability there is often an overall pattern called attractors. Attractors provide an understanding of what initially seems complex [26]. These attractors interact dynamically to create each unique prescription. In this study the main attractor was *drug price*. Other attractors were the profession (rational pharmacotherapy, evidence-based medicine), drug characteristics, repeat prescriptions, and the pharmaceutical industry.

Using complexity theories as a framework for understanding how GPs prescribe helped us to understand why GPs do not always prescribe according to recommendations. GPs' prescribing represents a balance of specific external factors and complex internal factors. As stated by Miller et al.: "It is never just about the specific; it is about the specific in relation to the whole, and the whole is always more than the sum of the specifics" [25].

The profession and clinical freedom

Health authorities collaborate with the medical profession to provide health services to patients. The tension between each doctor's clinical autonomy and the medical profession is both historical and relevant at the moment [27].

In the present study most GPs agreed on the importance of regulation in prescribing. Recommended formularies were generally accepted and regarded a useful tool in the process of choosing a first line-drug. This is supported by previous studies from both Great Britain and Germany, two countries with several years of experience with drug formularies [28,29].

Some GPs mentioned the importance of clinical freedom in prescribing. When compared with their actual prescribing it illustrates the contrast between attitude and action. Our study has shown that GPs prescribe according to the complexity in the process of drug choice combined with a substantial price-consciousness. GPs only have marginal leeway for free prescribing, confirming the antinomy between freedom and rationality. Rationality restrains freedom, whereas freedom seems irreconcilable with rationality [30].

Conclusion

GPs balance both internal and external factors when choosing an analogue. Choosing a drug in a therapeutic drug group is a regulated process in the realm of complex prescribing behaviour with drug cost as a major factor.

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The study complies with current laws in Denmark.

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