From drug utilization research to pharmaceutical anthropology

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The subject of my lecture "*From Drug Utilization Research To Pharmaceutical Anthropology*" provokes scepticism. Therefore, it seems necessary to start by making some remarks emphasizing the relevance of this approach to the problems of the market for pharmaceutical products.

In the developed industrial countries, as well as in the Welfare states the production and the distribution of drugs are part of those economic procedures that are strongly surveyed by scientific methods and are critically watched by the public and by the officials of the financing Welfare-organizations. Before a medicament is launched its therapeutical utility has to be demonstrated, it has to fulfil high requirements in a series of scientific tests. After having become licensed it will remain under surveillance with respect to adverse drug effects. At present, the rising costs of drugs are a permanent problem for politicians. Cost controlling methods belong to the most elaborated instruments of a health economy and are urgently sought for.

Regarding these high standards of biomedical and economic rationality by which the production and the distribution of drugs are governed, the following question has to be dealt with: Is there any need for pharmaceutical anthropological research apart from the need for a better understanding of the use of medicaments, offered by the so called "unconventional schools of therapy" *e.g.* homeopathists?

My thesis is that the methods of cultural anthropology are not only asked for to explain the use of drugs which are part of those unconventional therapies. According to our experiences, that is a quite interesting but rather small field, not worthwhile being discussed in this plenary session. Some recent results of drug utilization research are of more relevance for a growing need of pharmaceutical anthropological research. Drug utilization may be defined in the following way.

"The task of drug utilization research is the investigation of the distribution of drugs within the society with regard to the medical, social and economical causes and consequences of drug consumption. The aim of drug utilization research is the medical, economical and social improvement of drug therapy."

"There are two branches of drug utilization research:"

– "large scale, prescription-related studies for the purpose of national and/or international comparisons of drug consumption;"

– "patient or physician-related studies concerning the quality of drug-therapy."

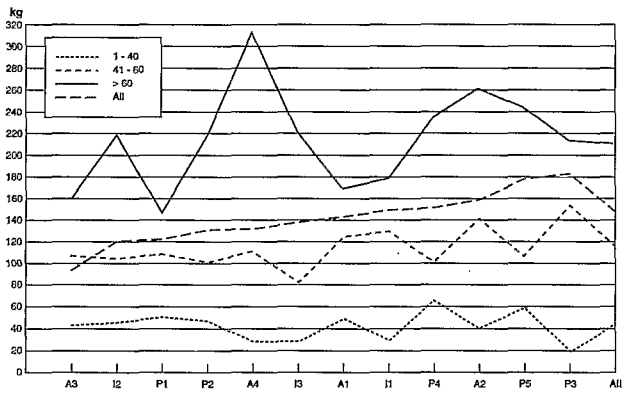
This new branch of pharmacology was first established in the northern European countries and in Great Britain as the National Health Services in these countries deliver the mass data which is indispensable for the purpose of drug utilization research almost automatically. The aim of this research is to study the economic and social consequences of drug utilization. There is a growing public interest in this rather expensively applied research because of rising costs and growing consumption, as well as quality assessment programs.

In Germany the Scientific Institute of Health Insurance established the "drug index" and publishes it since 1985. Its data is based on a sample of prescriptions (1/1000) coming from insurees of the statutory health insurance pharmacies. The representative sample includes 740,000 prescriptions. Experts describe how these prescriptions are distributed according to indication groups or areas. They analyze the costs and evaluate the therapeutical value with respect to the given clinical and pharmacological knowledge. Furthermore, they relate the costs to the expectations of health politicians. Standards for these evaluations are on one hand biomedical criteria concerning the proved therapeutical efficacy and on the other hand the goals of a health economy, such as limitation of costs, efficiency of expenditure, economy, quality assurance.

As experts apply these criteria to the results of the drug index presenting the data for 1991 they discover considerable deviations in some systematic respects. The fact that the aims set by biomedical standards and/or by political needs are not achieved cannot only be explained by the lack of pharmacological knowledge of the prescribing physicians or by the conspicuous consumption of patients. Both, the extent and direction of deviations from biomedical standards and economic postulates require a more thorough analysis in which the methods of pharmaceutical anthropology are applied.

Which are the deviations from biomedical standards and from the aims set by health politicians that are stated in the drug index of 1992? I am going to discuss the most important ones in the following.

Fig. 1
Prescribed DDDs/Patients according to age



Sample: 1 200 patients of 12 primary health care physicians from the state of Hessen (100 per physician). Period of observation: 3 months in 1989.

1. "A relative big share of prescriptions include those groups of medicaments that are based on uncertain or doubtful therapeutical concepts. Groups that are prescribed particularly often are peripheral vasodilators, expectorants, topical products for joint and muscular pain and drugs of antivaricose therapy. In 1991, a total of 243 million prescriptions of these doubtful drugs were made, which means a share of 31.7% of the total amount of prescriptions of the market for pharmaceutical products. The total costs of these doubtful therapeutical groups amount almost constantly to 6.1 billion DM." (p. 13)

The second statement refers to the economical consequences.

2. "In 1991, essential increases in prescription numbers were caused by regrouping in the prescription-spectrum and were termed "structure-component" in the turnover analysis. The structure-component shows which part of the variations in turnover could have been caused by the utilization of other drugs (interdrug effect) or, in case of identical drugs, by the prescription of larger packagings or more expensive manners of administration and concentrations (intradrug-effect)... The structure-component was about 5.1% in 1991... and corresponds to an increase in the turnover of about 1158 million DM." (p. 15) The interdrug effect is the most important one, which means that doctors and patients have changed the therapy. As other investigations have shown, such changes in drug therapy have occurred more often as previously expected and can only partly be explained by biomedical progress.

3. "The age-group of insurees who are 60 years and older and only make up 21% of the total population consume about 55% of the total costs of medicamentous therapy, which is about 2.6 times as much as the average population-share. On an average, every insuree who is 60 years and older receives a long-term therapy of about three drugs. If the daily dosages of drugs coming from indication groups, such as psychopharmaceutical, hypnotics and sedatives are added, that would be enough to maintain a long-term therapy for one out of five patients of the age-group of the 80 to 84 year-olds." (p. 429)

Two facts which are relevant to this discussion are not mentioned in the drug index.

1. Drugs having an uncertain or doubtful therapeutical value are prescribed for the elderly as they get the largest share of all prescriptions.

Fig.2
Similarities and differences of approach

Body of theorical knowledge	Drug utilisation Research	Pharmaceutical anthropology
	Bio-medicine/Health-economies	Sociology/Cultural anthropology
Criteria of evaluation	Biomedical standards expectations of health politicians	Evidence/Recognition by the actors
Methods	Epidemiology	Epidemiology/Methods of empirical research in cultural anthropology
	Prescription groups according to similar therapeutic effects or areas structure of expenditure	Patient groups with similar treatment courses/diagnoses related groups
	Prescriptions	Prescriptions linked with the context of individual treatment courses
Data base	Mass data of social insurance or National Health Service documents	

2. Because of the lack of proved experience physicians are not sure especially about the right therapy for older persons. Therefore, they keep on relying on their own limited experience in order to satisfy the needs of their patients, as long as Geriatrics, a new branch of clinical medicine, still is fighting for its academic acceptance even though life expectancy of the elderly is growing. As we found out in our work with a peer review group concerning drug therapy in primary health care, there are big differences in the prescriptions made for patients who are 60 years and older (Fig. 1).

The reported deviations from biomedical standards or from economic expectations provoke many questions and offhand explanations. The easiest one is to accuse physicians and patients of not obeying the standards or of being ignorant or superstitious; another explanation is to suggest that producers seduce doctors and their patients by means of aggressive marketing strategies. There surely is some evidence for such statements, but if we realize that one third to one half of the whole amount of prescriptions are based on doubtful or unproved therapeutical concepts, we are forced to accept the "normality" of this kind of prescription behavior and drug consumption in the first place and are secondly obliged to look for other, more appropriate explanations in a scientific way.

At this point of argumentation the paradigm of drug utilization research has to be changed (Fig. 2). On one hand drug utilization research strongly relies on pharmaco-epidemiological methods and on the other hand on biomedical and economic arguments. Its data basis is highly aggregated mass-data provided by the financing welfare-institutions. This approach does not give us an idea of the structure or motives of social behavior. There is a remarkable similarity between the development of sociology and cultural anthropology one hundred years ago. Sociology faced the same situation when juridical and economic conceptualizations of social reality no longer satisfied the needs for the explanation of society. At present, drug utilization research is facing the same problem. Normative biomedical standards, rational market conditions and economic incentives do not explain the behavior of doctors and patients with respect to drug utilization sufficiently. Therefore, other approaches to the way of prescribing and using drugs are needed.

Furthermore, prescriptions serve as a data basis. They are indispensable as they are documents that illustrate real behavior. But they have to be collected and linked differently than drug utilization research does at present.

Prescriptions document a single moment in the treatment history of a patient. In order to understand the underlying concept of drug therapy it is necessary to link the prescriptions to other diagnostic and therapeutical measures of the doctor. It is especially requisite to know about the concrete diagnosis on which the prescription is based. The therapeutical drug therapy concept has to be inferred from the whole context of the treatment history of a patient. These individual contexts which are documented by administrative procedures, which rule the exchange between doctors and financing organizations, represent interactions of doctors and patients during the therapeutic process. By means of this approach the documents become a piece of culture which serves us as a basis of understanding the doctor-patient relationship. Culture is not a self-explanatory social reality, it has to be interpreted. Patients and doctors may help us by interpreting their own behavior, but they are involved and as they are the actors they are only to some extent aware of the consequences of their own actions. The following steps and tasks for the pharmaceutical anthropologist arise from this situation (Fig. 3).

1. He has to reconstruct the natural context of drug treatment on the basis of documents. He has to link the prescriptions to other diagnostic and therapeutical measures and to the subjective concept of the doctor, which made him prescribe certain medicaments for certain patients. The concrete diagnosis, in the form the doctor has written it down on the document is an essential element for anthropological research.

2. He has to structure all these different individual contexts into meaningful groups, *e.g.* the diabetic patient, the drug-dependent patient, the patient suffering from rheumatic illnesses, the utilization of drugs by the unconventional therapeutical schools and so on. This way he creates constructs. Crucial questions arise at this point: who can be included into the group, who must be excluded from the group?

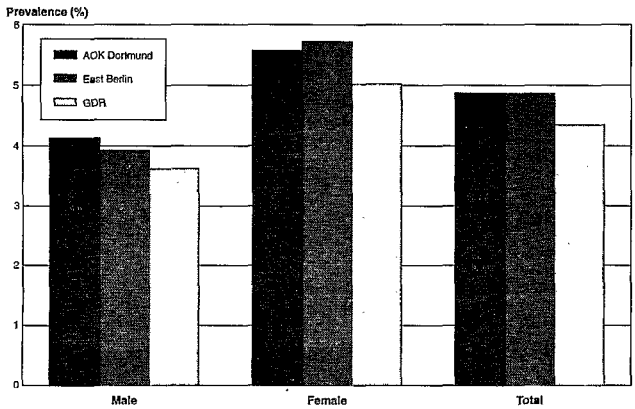
3. He has to interprete his constructs, which means that he has to infer real behavior and its motives from documents. As these interpretations cannot be made without the support of doctors and patients he has

4. To inform doctors and patients of his results. In this last and crucial step the actors are confronted with the culture which reveals their own actions and motivates them to reflect the basic assumptions of their therapeutical concepts and expectations. We do this in so-called peer review groups.

Fig. 3
Steps of pharmaceutic-anthropological procedure

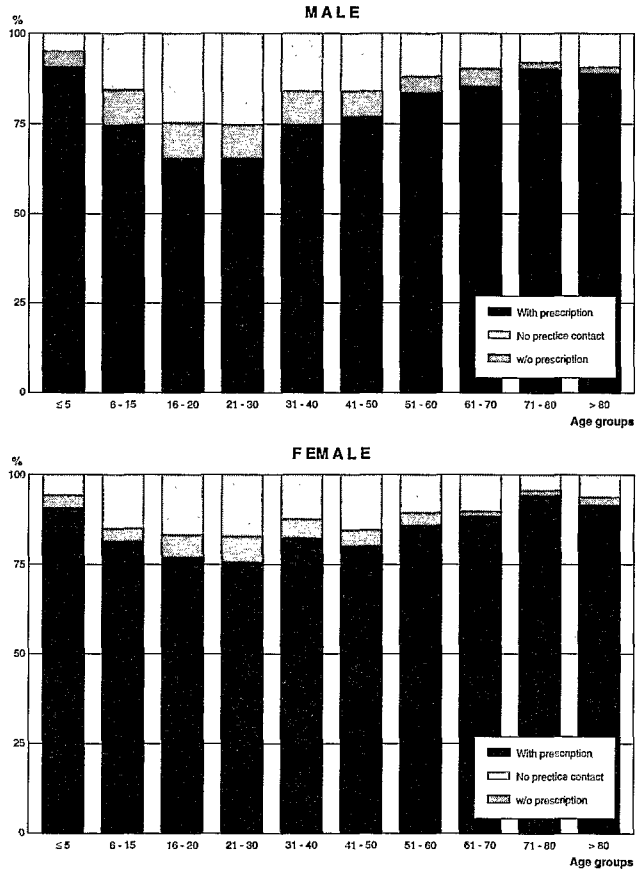
Restoring the natural context of drug treatment linking prescriptions with diagnoses and diagnostic and therapeutic measures
Individual treatment courses
Forming meaningful groups with similar needs and/or similar treatment contexts
Inferring the therapeutic concept and/or expectations of doctors and patients
Refining and evaluating by playing the results back into the field *p.e.* review groups

Fig. 4
Total standardised 1988 diabetes prevalence rate in East Germany (GDR) and West Germany (FRG)



Standardised on the age distribution of the new FRG

Fig. 5
Utilisation of insurees of the AOK-Dortmund in 1988 share of patients with/without prescription



After having made these remarks concerning the scope, the relevance and the modes of procedure of pharmaceutical anthropology, I would like to demonstrate some selected results of our Düsseldorfer research group.

Our data basis are all documents concerning the delivery of medical services to a sample of 5% socially insured persons; they are members of the social insurance fund of the city of Dortmund in the Ruhrgebiet. The sample represents all members of the fund. The findings can be generalized by standardization for the population of Dortmund and in case of special presuppositions for the population of Germany. We were very pleased to find out that our estimations concerning the prevalence of diabetes corresponds to the figures of the Diabetes register of the former German Democratic Republic (Fig. 4). This result points out the validity of our data.

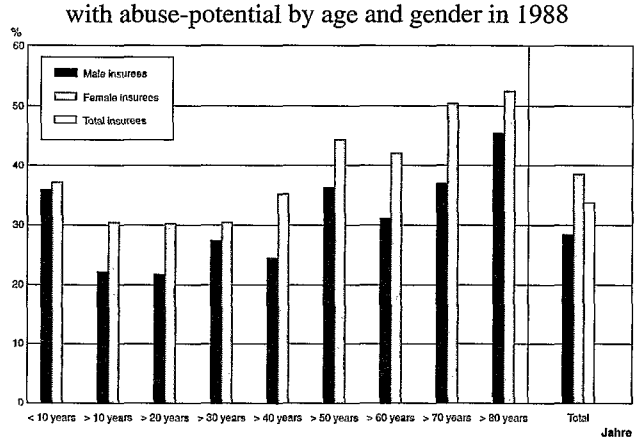
At present, we are observing and analyzing the treatment courses of almost 7,000 patients in 1988 and 1989 and are collecting the 1990 documents. This will give us a sequence of three years, which is an important widening of our approach in so far as not only the prevalence but also the incidence can be observed then.

By looking at a single year (1988) one can say that almost 90% of the population goes to the doctor at least once a year. 90% of these patients get at least one prescription (Fig. 5). Therefore, it is not astonishing that 450 million prescriptions are made in our social insurance system per year.

One problem that seems to be appropriate to demonstrate the mode of pharmaceutical anthropology is drug dependency.

1. We collected all prescriptions including psychotropic substances and classified them according to groups of substances, gender and age. This order gives us an impression of the number of people who get in touch with psychotropic substances in our society (Fig. 6 and 7).

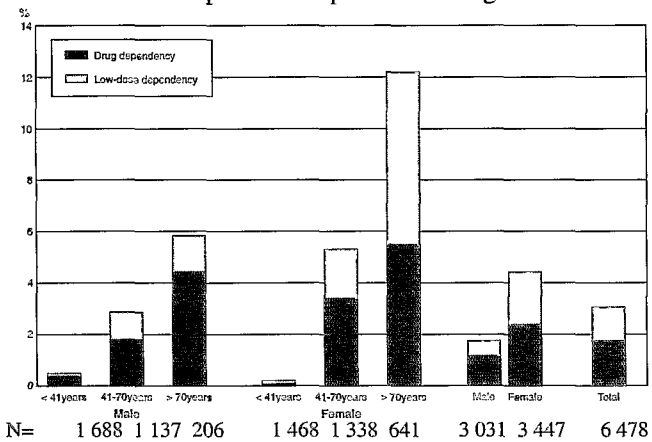
Fig. 6
Share of AOK-insurees, who were in contact with drugs with abuse-potential by age and gender in 1988



Random sample	N = 3 031	N = 3 447	N = 6 478
Total PP-contacts	n = 927	n = 1 410	n = 2 337
Benzodiaz.-contacts	n = 251	n = 623	n = 874
Morphinderiv.-contacts	n = 590	n = 794	n = 1 384

Fig. 7

Dependency under male, female, young and old insurees
I. Dependent on prescribed drugs



N= 1 688 1 137 206 1 468 1 338 641 3 031 3 447 6 478

2. The next step is to define the construct "dependency". This definition was formulated in cooperation with a psychiater (Prof. Poser, University of Goettingen). We decided to apply three criteria which indicate dependency: duration of drug taking, doses and diagnosis (Fig. 8).

3. Apart from the figures of prevalence (Fig. 9) which are of special interest for health promotion, the results are astonishing in two respects. The greatest share of dependent persons were to be found among the elderly and here among the women.

4. If we do not only concentrate on drug dependency but also include diagnoses indicating dependency on alcohol, we can say that more men are dependent than women. Weighing this result, it has to be indeed considered that doctors write down diagnoses which indicate alcohol dependency on documents for health insurances very reluctantly. Here, only the essential core of alcohol dependent men is to be found.

5. In any case we find patterns of dependency that are specific for women and for men. As Mellinger and Balter have shown (1978), this pattern of dependency corresponds to the pattern of stress management very well. (Fig. 10). In situations of high emotional distress men prefer alcohol, women drugs. I think this is a very convincing example of what can be achieved by pharmaceutical anthropology.

Fig. 8

Dependency on drugs with addiction potential

Permanent contact by
- High prescription intensity (< 1 DDD)
- Low prescription intensity (½ - 1 DDD)

With indication to addiction related diagnoses
- Low dose depensendy
- Substance use disorder
- Alcohol dependency

Fig. 9

Dependency under male, female, young and old insurees
II. Dependent with diagnosis of dependency

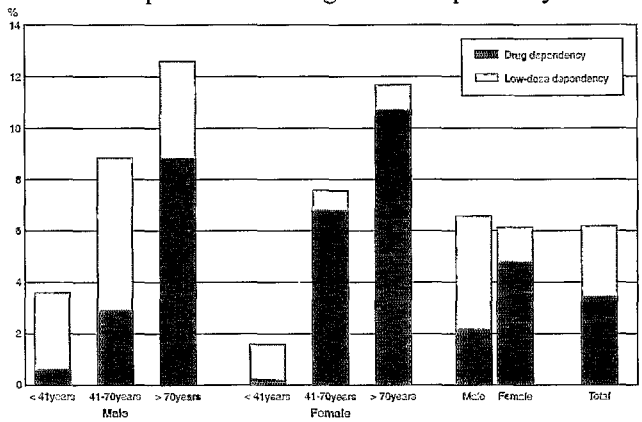
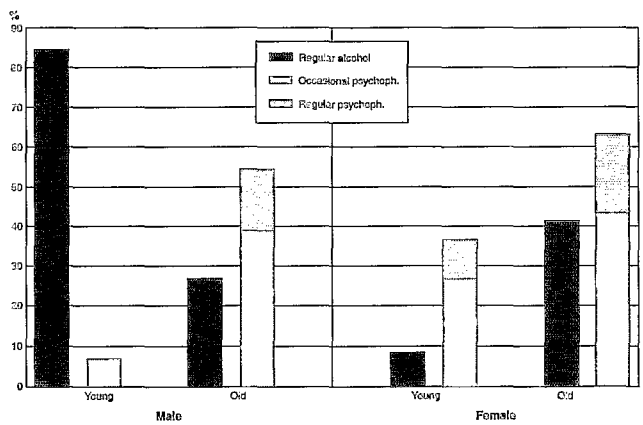


Fig. 10

Psychotropics and regular alcohol-consume in case of high psychical distress in youth (18-29 years) and in seniority (60-74 years). Mellinger, Balter, 1978.



Finally I would like to make some remarks concerning the crucial task of our anthropological approach, namely the discussing of the results with the actors themselves. A way to include the actors is given in physician quality circles. These circles are designed to incite physicians to chose, according to their best judgement and in accordance with their acquired convictions, the most qualitative therapies within a given financial limit.

The key to discussing the prescription behavior in realistic terms is to inform the physician about his established behavior. This step includes a risk that has to be handled carefully. The

physician's perception that his own modes of prescription differ from biomedical norms may lead to a loss of professional self-esteem. According to Balint, rules of discussion ensure that a tolerant and open atmosphere prevails in which fears and psychological resistance to the discussion about real therapeutic behavior are eliminated and in which the dynamics of the group are used to support the discussion about motives.

The discussion and the comparison of prescription analyses within the peer review group allow the participating physicians to become aware of their prescription behavior and enable them to recognize the social, psychological and economic reasons of their own behavior.

The function of quality circles can be shown by using the example of the prescription of vasodilating drugs.

Vasodilating drugs are on fifth place in terms of drug prescription frequency in the Federal Republic of Germany with a turnover of 1.07 billion (1,070,800 million) DM. Apart from being expensive, vasodilating drugs are in general judged to be ineffective and to have a steal effect and other undesirable side-effects. This group of drugs is unknown in Great Britain and the Scandinavian countries. Vasodilators are mostly prescribed in the geriatric field: While they were given to few people younger than 60 years (7%) the percentage of vasodilator recipients older than 60 years was remarkable (between 60 and 65 years old: 15% and between 75 and 80 years old: 30%). The distribution of age of the recipients is contraindicated by biomedical opinion.

Motives underlying the prescription of drugs were freely uttered and discussed. After the physicians had examined their own methods of prescription, an exhaustive discussion about the reasons for the excessive prescribing of vasodilating drugs was held in the pharmacotherapy circle. There was a considerable demand on the part of elderly patients having problems with cerebral circulation and their nursing environment especially for expensive gingko preparations which cannot be ignored by physicians.

The discussion in the circle lead to a remarkable change in the cultural basis of interactions between doctors and their patients. The participants of the circle agreed upon the following rule. The initial prescription of these drugs can be avoided by writing down the following prescription on a prescription pad.

The evaluation showed a considerable reduction in the prescriptions of these drugs of 20%. The reductions were especially to be found in the case of physicians who had been frequent prescribers, some of whom reduced prescriptions by as much as 50%. The reductions were indicated by parameters such as the number of patients receiving the prescriptions, the amount of DDDs prescribed and the amount of money spend for these drugs. A reduction was particularly to be found among the expensive gingko-based preparations.

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