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Communication Study

Provider–patient interaction in rural Cameroon—How it relates to the patient's understanding of diagnosis and prescribed drugs, the patient's concept of illness, and access to therapy

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ABSTRACT

Objective: This cross-sectional survey examines the relation between provider–patient interaction and several patient-outcomes in a rural health district in Cameroon.
Methods: We used structured patient interviews and the Roter Interaction Analysis System (RIAS) for analysis of audio-recorded consultations.
Results: Data from 130 primary care consultations with 13 health-care providers were analysed. 51% of patients correctly named their diagnoses after the consultation; in 47% of prescribed drugs patients explained correctly the purpose. Patients' ability to recall diagnoses was related to the extent of clarity a provider used in mentioning it during consultation (recall rates: 87.5% if mentioned explicitly, 56.7% if mentioned indirectly and 19.2% if not mentioned at all; $p < 0.001$). Two thirds of patients were able to describe their concept of illness before the consultation, but only 47% of them mentioned it during consultations. On average patients who mentioned their disease concept were faced with more remarks of disapproval from providers (1.73 vs 0.63 per consultation; $p < 0.01$). Although 41% of patients admitted problems with financial resources to buy prescribed drugs, discussion about financial issues was very rare during consultations. Providers issued financial questions in 32%, patients in 21% of consultations.
Conclusion: This study shows that provider–patient interaction in primary health care in a rural Cameroon district deserves more attention. It might improve the patients' knowledge about their health condition and support them in beneficial health behaviour.
Practice implications: Our findings should encourage providers to give more medical explanation, to discuss patients' health beliefs in a non-judgemental manner, and to consider financial issues more carefully.

1. Introduction

In countries with limited health care and financial resources, good quality of medical care is to a large extent dependent upon patients' and families' personal willingness and capability to engage in their own health care. This comprises buying drugs or paying for treatment from their own budget, not the least to comply with long standing treatment for chronic diseases. In Cameroon less than 2% of patients have a health-care insurance the rest has to pay for health care of their pocket [1]. From the patients' perspective starting treatment depends on understanding the rationale behind it. Therefore, the extent to which routine medical consultations improve patient knowledge about their disease and treatment options is essential. This includes professionals' ability to take into account patients' concepts of illness and disease, and their financial and social conditions of living.

To date only little research has been done on provider–patient interaction in Sub-Saharan Africa, focusing mainly on information, education and communication (IEC) programs and their impact on patients' beliefs and behaviour in preventive settings such as family planning, STI- or vaccination programs [2–4]. At least in one investigation, good interpersonal communication and counselling skills were found to be at the heart of successful IEC programs [5]. The few studies focusing on provider–patient interaction in African countries specifically during medical consultation commonly

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reach the conclusion that a greater emphasis on the interpersonal communication between patients and health-care workers would be beneficial in a variety of settings [6–8]. However, to our knowledge the direct relationship of communication during routine medical visits with the patient's knowledge about the disease and his/her health believes has never been examined in Sub-Saharan Africa.

This paper presents a descriptive analysis of patient–provider interaction in a rural Cameroon health district involving the district hospital and peripheral clinics operated by nurses (non-physician clinics), using the Roter Interaction Analysis System (RIAS). RIAS has been developed to analyse the interaction between health-care providers and patients [9]. RIAS is widely used in high-, low- and middle-income countries [10–16], but the methodology has not been widely applied to medical settings in African societies to date. In our analysis we will focus on four aspects that might relate to communication: patients' understanding of their diagnosis and the prescribed therapy, patients' concept of illness, and their ability to afford the prescribed therapy.

2. Methods

2.1. Study design

We performed a cross-sectional survey of patient–provider interactions in different medical settings in one health district by combining structured interviews with patients and providers with the analysis of their interaction during the consultation with RIAS.

Our hypotheses were:

- The patient's ability to recall his diagnosis correctly after the consultation correlates positively with the extent to which it was explicitly stated, and with the number of explanations the patient had received from the provider.
- The patient's ability to state the purpose of prescribed drugs likewise correlates positively with the number of explanations during a consultation.

Furthermore, descriptive analyses were grouped around the following research questions:

- How many are able to describe their own concept of illness before the consultation, how many discuss it during consultation and how does this influence the communication pattern between patient and provider?
- How many patients state after consultation that they agree with the provider's diagnosis, and does the level of agreement correspond with the quality of the consultation?
- How many patients state after consultation that they cannot pay the prescribed therapy or diagnostic procedures and has this topic been discussed during consultation?

The study design was developed in cooperation with authorities of the Cameroon Ministry of Public Health. Local health-care providers and village representatives approved the study. Patients' names were kept confidential, all patients and providers gave their consent before participating in the study. During the study period it was agreed upon with health authorities and village representatives, that financial support was offered, when patients were unable to pay for emergency treatment.

2.2. Description of the area of the investigation

The study was conducted in health-care facilities of the medical district of Mfou in the French-speaking region of Central Cameroon. The district covers an area of about 407 km^2 with an estimated 67,000 inhabitants at the time of the investigation. Most people live in small villages and make their living from agriculture. In 2002 the district had one district hospital with three physicians and 15 peripheral clinics operated by nurse clinicians located in different villages, where basic health care is provided by nurses. Six of the nurse led clinics are managed by private confessional organizations but are integrated into the public health-care system.

2.3. Study sample

Ten of the health-care facilities were randomly chosen for the investigation: the district hospital, five public and four confessional nurse-lead clinics. During a three week period in June 2002 investigators visited each facility for two days. The aim was to include, after informed consent, each patient who arrived at the facility for consultation. Exclusion criteria were: patients who preferred to speak to the doctor in their native language and patients who came for routine vaccination or prenatal visits. If patients were accompanied by a family-member who took over the conversation with the provider and the responsibility to buy drugs, etc., it was the accompanying person's demographic indicators, questionnaire responses and utterances that were registered. This was mostly the case for children accompanied by a parent and for very old patients who arrived with their children.

2.4. Data sources and description of variables

2.4.1. Data sources

We collected data from four sources: structured patient interviews before and after the visit, audio recording of the consultation and questionnaires. For these questionnaires, patients were read aloud questionnaire items and a specially trained Cameroon nurse, who was not involved in the clinical care of study participants, marked the respective boxes in the questionnaire form. The consultation was recorded using a microphone placed inside the consultation room and connected through a cable of sufficient length so that the person handling the recorder could sit outside the room to avoid interfering with the consultation.

2.4.2. Description of variables

Table 1 summarizes the study's variables and their sources. Variables from tape-recorded consultations were coded according to a pre-defined and slightly adapted version of the RIAS-manual [17,18]. RIAS assigns each utterance – best described as containing one single thought – to one of 39 mutually exclusive categories. To match the study objectives, utterances were further analysed for the extent to which they indicated professional communication (proficiency items). They were defined as follows:

1. *Medical explanation*—this proficiency item was coded in addition to the RIAS-category *gives medical information*, if there was a specific *explanatory* quality that could help the patient to better understand his/her medical condition.
2. *Therapeutic explanation*—this proficiency item was coded in addition to the RIAS-category *gives therapeutic information*, if there was a specific *explanatory* quality that could help the patient to better understand the prescribed therapeutic regimen, especially its purpose.
3. *Patient talks about his/her concept of illness*—this proficiency item was coded in addition to the RIAS-category *gives medical information* if the patient mentions or discusses his/her own concept of illness or his/her health beliefs.
4. *Talking about financial issues*—utterances, in which the patient or the provider discussed the patient's ability to pay necessary

Table 1
List of independent and dependent variables and their sources. See Section 2.4.2 for a definition of proficiency items.

Independent variable	Source	Dependent variable	Source
Provider mentioning the diagnosis (explicitly – only indirectly – not mentioned at all)	Tape-recorded consultations	Patient's comprehension of the diagnosis	Comparison of patient- and provider questionnaire
Frequency of the proficiency item *medical explanation*	Tape-recorded consultation	Patient's comprehension of the diagnosis	Comparison of patient- and provider questionnaire
Frequency of the proficiency item *therapeutic explanation*	Tape-recorded consultation	Patient's comprehension of the prescribed drugs' purpose	Patient questionnaire
Patient's concept of illness	Patient questionnaire	Frequency of utterances coded with the item *patient talks about his/her concept of illness*	Tape-recorded consultation
Frequency of the item *talks about his/her concept of illness*	Tape-recorded consultations	RIAS-data of the provider's utterances	Tape-recorded consultation
Patient's economic access to prescribed therapy	Patient questionnaire	Frequency of utterances coded with the item *talking about financial issues*	Tape-recorded consultation

medical procedures or drugs, or when the patient asks about the price of certain drugs, etc.

In addition to RIAS codes, raters noted for each consultation, if the provider had mentioned the diagnosis *explicitly*, had mentioned it only indirectly or did not mention it at all. The first author analysed all interviews as part of his medical thesis. The last author double-checked coding for the initial 10 interviews and each 8th consecutive interview thereafter. If discrepancies occurred they were discussed until final agreement was reached.

2.5. Statistical analyses

To examine the two main hypotheses, patient characteristics, the explicitness of the stated diagnosis and the quantity of medical and therapeutic explanations given were used as independent variables. Patient's ability to recall his/her diagnosis and the purpose of prescribed drugs were analysed as dependent variables. Statistical analysis included ANOVA's in order to assess how nominal independent variables influence a continuous dependent variable. One-sampled and two-sampled *t*-test was used to compare the means of continuous variables in subgroups and the χ^2-test was applied to examine the relevance of differences between categorized variables. All analyses were run on S-PLUS.

3. Results

3.1. Participants

Thirteen health-care providers participated in the study. Nine clinics were lead by nurses, in these clinics the principal nurse took part in the investigation; in the district hospital all three physicians and the principal nurse participated. Provider characteristics are shown in Table 2.

During the period of the investigation 135 patients met the inclusion criteria representing roughly 80% of patients who came for consultations during that time, 132 gave their consent to participation and data of 130 interactions could be analysed. In two cases quality of tape recording was too poor for analysis. The consultations were classified as general medicine (60%), gynaecological and obstetrical (16%), or paediatric (24%). Characteristics of the persons interacting with the providers are displayed in Table 3.

Table 2
Characteristics of health-care providers participating in the study ($n = 13$).

Age	41 years (27–53)
Gender	7 female, 6 male
Level of medical education	
Physician	3
Registered nurse (3 years of formation)	3
Staff nurse (2 years of formation)	6
Care assistant (1 year of formation)	1
Professional experience	12 years (1–30)

3.2. General communication patterns

The average number of utterances per consultation was 134 with a wide variance between a minimum of 13 and a maximum of 379 utterances. Patients' most common categories were giving medical information (63.2%) and utterances manifesting their consent with what the provider just had said (RIAS-category *shows agreement* 22.1%). Providers' utterances consisted of questions in 29.2%; most of them (70.2%) were closed questions. Other frequently used provider categories were counselling (16.5%), giving information (18%) and giving orientation and instructions (7.8%). The average frequency of other RIAS categories was below 6%.

3.3. Comprehension of the diagnosis

After the consultation, 51% of the patients could name their diagnosis, 33.5% answered that the provider had not told them anything about their diagnosis, and 15.5% named a diagnosis different from the one noted by the provider in the provider questionnaire. There was no correlation between participants' ability to recall the diagnosis and their age, gender, educational level, or civil status. However, the patient's ability to recall the diagnosis was associated with two items from the analysis of tape recordings: First, the more explicitly the provider stated the diagnosis during the consultation, the better patients were able to recall it (see Table 4). Second, patients who understood their diagnosis received on average more medical explanations.

In 53% of consultations, at least one utterance of professional gives medical information was also coded with the proficiency

Table 3
Characteristics of the 130 patients or the interacting person respectively participating in the study.

Age of the person interacting	33 years (11–73)
Gender of the person interacting	72% female
Educational level of the person interacting	
Less than 6 years of school	17%
Finished 6 years of primary school	51%
Secondary school or further education	32%
Civil status of the person interacting	
Married	40%
Not married	54%
Widowed	6%

Table 4
Percentage of consultations in which the provider did not mention the diagnosis at all, mentioned it indirectly or mentioned it explicitly and percentage of patients having understood the diagnosis properly (3rd column). Significance in the χ^2-test: $p < 0.001$.

The provider ...	Percent of consultations	Percent of patients understanding the diagnosis
... did not mention the diagnosis at all	40.0%	19.2%
... mentioned the diagnosis indirectly	23.1%	56.7%
... mentioned the diagnosis explicitly	36.9%	87.5%

Table 5
Relationship between understanding and agreement: comparison of patients who understood/did not understand their diagnosis and distribution of patients who showed different levels of agreement with the health-care providers' diagnosis. χ^2-test for difference $p < 0.001$.

Patient's statement after consultation	Patients who understood the diagnosis	Patients who did not understand the diagnosis
Agree with the provider	84%	49%
Ambivalent	9%	11%
Do not agree with the provider	7%	40%

item medical *explanation*; the average frequency of this proficiency item was 2.6%. There was a significant difference in the number of medical *explanations* given between patients who recalled their diagnosis correctly or not (3.9 vs 1.2 medical *explanations* per consultation; 95%CI for differences in mean: 1.2–4.0; standard two-sampled *t*-test, $p < 0.001$).

3.4. Comprehension of prescribed drug therapy

On average three drugs were prescribed per consultation (min 0; max 7); on average patients could associate the effects of 1.4 drugs correctly with their medical condition (e.g. Paracetamol against the fever, Quinine against the malaria, etc.). Neither the number of prescribed drugs, nor the proportion of drugs of which the patient understood their purpose correctly was related to any patient characteristic. In 42% of consultations there was at least one utterance that was rated as professional gives therapeutic *explanation*. The average frequency was 1.3% of all utterances. There was no statistically significant correlation between the independent variable of number of therapeutic explanations given by the provider and the dependent variable of the proportion of drugs in which their purpose was understood correctly.

3.5. Patients concept of illness and its reflection during consultation

Among the participating patients 67% arrived at the health-care facility with a concept of illness that they could describe explicitly before the consultation. About 12% of patient concepts were rooted in local traditional health beliefs (e.g.: "An evil worm was thrown at me by a neighbour" or "I have crossed an (invisible) line, which brought on the illness", etc.), whereas the majority was reflecting concepts of western medicine.

Among patients who arrived at the facility with their own concept of illness, only 47% mentioned it at least once during the consultation. Older patients mentioned their concept of illness twice as frequently as younger patients ($p < 0.05$). Providers made significantly more statements coded with the RIAS-category *shows disapproval* in the patient group that mentioned their concept than in the group that did not (0.63 vs 1.73 utterances per consultation, one-sampled *t*-test, $p < 0.01$). Overall the explicit discussion of patients' concepts was rare (proficiency item: *talks about concept of illness*: 1.2%).

3.6. The patient's concept of illness after consultation

Regarding the patient's concept of illness after consultation, overall 67% stated agreement with the provider's diagnosis; this includes patients, who said that they did not understand their diagnosis. 23% of patients disagreed with the diagnosis given by the professional, and 10% were ambivalent. There was a strong correspondence between patients who understood the provider's diagnosis and their agreement with the provider after consultation (see Table 5).

3.7. The patient's financial situation and its discussion during consultation

After the consultation 59% of patients said that they could afford buying prescribed drugs or paying for medical exams the same day, 32% answered that they had an idea, how to find the money during the next days, and 9% indicated that they would virtually never be able to pay the required amount. Responses to this item were not related to patient characteristics. The overall frequency of utterances relating to talk about financial issues was 0.9% for patients and 1.3% for providers. Only 21% of patients and 32% of providers made at least one utterance per consultation that was coded with the proficiency item *talk about financial issue*. This was not related to patients' statements after the consultation about whether or not they could pay the treatment prescribed.

4. Discussion

The scope of this cross-sectional survey is to examine the patient–provider communication during primary care consultations in rural Cameroon. It especially focuses on four aspects: the hypotheses that medical and therapeutic explanations lead to a better understanding of the diagnosis and the prescribed drugs, and on the questions whether patients' financial situation and their concept of illness are discussed.

Results showed that the patients' understanding of the diagnosis is related to the number of medical explanations that they were given during the consultation (3.9 vs 1.2) and to how explicitly the provider names the diagnosis: if the provider mentioned the diagnosis explicitly almost 90% of patients recalled it correctly, independent from age, gender, marital status, and educational level. Moreover, 84% of patients who understood the diagnosis said that they agreed with their health-care provider concerning the diagnosis that he or she had provided. In contrast 40% of those patients, who did not understand their diagnosis, stated that they did not believe in the professional's diagnosis.

Given these figures it is all the more disappointing that in 47% of consultations providers did not make a single statement that could be coded as providing a *medical explanation*. During informal discussions between the article's first author and health-care professionals in the Mfou district, providers often raised concerns, that many patients do not follow treatment recommendations or look for treatment from traditional healers because they did not understand or believe in their diagnosis. In this context, the fact that the overwhelming majority of patients to whom the diagnosis had been explained understood their diagnosis and believed that it was correct is very encouraging.

We could not confirm our second hypothesis: the number of *therapeutic explanations* did not improve patients' understanding of the purpose of the drugs that they were prescribed. This may be due to a very low overall frequency of this item (1.3% of provider's utterances), but it might also reflect the more complex task of recalling the purpose of a prescribed drug compared to recalling

the name of a disease. It has been suggested that verbal communication alone may not be sufficient to explain the purpose of prescribed drugs; visual aids have successfully been employed for low-literate or illiterate patients in South Africa as well as in the North-West province of Cameroon [19,20]. In our study patients understood on average the purpose of less than half of prescribed drugs. This low proportion is consistent with findings from a WHO survey on appropriate drug use in missionary clinics in the Southern Province of Cameroon: patients understood application, purpose and necessary precautions in 38.4% of prescribed drugs [21].

Financial issues were rarely discussed with patients, even though 41% of patients admitted after the consultation that they could not pay the prescribed therapy on the day of the consultation. Many health-care professionals in Cameroon are concerned about patients' reluctance to follow treatment recommendations for economical reasons. These concerns seem realistic based upon national figures that state that in Cameroon an estimated 40% of the population is living below the national poverty threshold and 98.3% of private health-care costs are paid out-of-pocket [1,22,23]. Patients who lack the resources to buy prescribed drugs will either look for cheaper drugs on the black market, where up to 25% of drugs are of unacceptable quality [24], seek treatment in the informal health sector [25], or buy only part of the prescribed drugs. In this context, discussion of the financial implications a prescribed therapy has, should therefore be part of all medical consultations.

Two in three patients arrived at the consultation with an own concept of their disease, but only 47% of them mentioned it to the provider; older patients were more likely to talk about their concept. As older people are more respected in rural Cameroon, one might interpret this finding as indicating that patients need much courage to issue their point of view in front of the provider. They therefore would need special encouragement from professionals to do so. However, in this survey health-care professionals do not support patients to bring in their opinion; they react with more disapproval in consultations in which patients' concepts are explicitly mentioned. These findings are similar to results from family planning visits in Kenya reported by Kim et al., where the authors report generally poor client participation and conclude that providers may encourage clients to play a more active role, relate information specific to each client's personal situation and reward client's attempts to participate [8].

Notably, only 12% of patients' concepts originated from traditional health beliefs even though the use of traditional medicine is very frequent in Cameroon [26]. This may be explained by specific characteristics of health seeking behaviour in the Mfou district. During the interviews, many patients distinguished conditions that needed traditional medicine and conditions that required a treatment based upon western medicine. This observation is consistent with the results of studies from other Sub-Saharan African countries [27].

Generally, few studies have focused on provider–patient interaction (PPI) in Africa to date. Other topics prevail like the health worker crisis [28–30], the burden of HIV/AIDS [31], the emerging problem of chronic diseases [32,33], and the slow progress with regards to the millennium development goals in most African countries [23]. However, the few studies conducted in African countries underline the importance of PPI in this setting. Patients in Nigeria for example described inadequate interaction with providers as a more important problem than deficits in the quality of hospital equipment. The authors concluded that more emphasis needs to be placed on enhancing the interpersonal relationships between health workers and patients [6]—a conclusion that is endorsed by our survey. Another study conducted in Uganda stresses that the implementation of HIV/AIDS programs not only requires improved access to antiviral drugs, but has to be combined with an improvement in patient–physician communication. As a majority of HIV patients use herbal medicine, non-Western treatment options and their possible interactions should be dealt with during consultations to ensure that patients can make informed decisions about herb and pharmaceutical drug co-therapy. Integrating discussion about herbal medicine and its influence on antiretroviral therapy was presented as a timely and cost-effective component of HIV and AIDS treatment programs in Africa [7]. In this regard the low frequency of interactions relating to the patients' concepts of illness in our study and the often harsh reactions of professionals when patients brought in their own ideas certainly calls for an improvement in professional's willingness to acknowledge their patients' disease concepts.

Further evidence in favour of a more patient-centred approach comes from a study conducted 1995 in Egypt, focusing on family planning consultations. It suggests that client-centred counselling positively influences the likelihood of continuing contraceptive methods [10].

In summary, our study helped to identify in the district of Mfou some important obstacles to the patient's access to appropriate care. The identified obstacles are misunderstanding of diagnosis and treatment as well as poor discussion of the patient's concept of illness and his financial circumstances during consultation. Our data suggest that improved provider–patient interaction might help to overcome at least some of these obstacles; in particular it may lead to patients who are better informed about their health condition.

4.1. Limitations of this study

This study has several limitations. First, participation in the study was limited to patients who were able and willing to speak French during the consultation, which lead to the exclusion of some patients. However, this does not necessarily limit the applicability of our findings to other African regions, as health-care providers in Cameroon – as elsewhere in Africa – often work in regions, where they do not master the native language themselves; therefore consultations in French are rather the rule than the exception in this region of Cameroon. Secondly, the fact, that we aimed to survey an entire district led to a very heterogeneous study-population with gynaecologic, general medical and paediatric patients consulting medical doctors as well as nurses. Therefore, our observations provide only a rather general overview of communication patterns in a region of Cameroon.

4.2. Practical implications

Consultations in primary health care in Cameroon might be improved in several aspects. The study showed in a cross-sectional design that patients' understanding of diagnosis and treatment needs improvement, that important issues like financial restrictions and patients' health beliefs have to be dealt with more frequently and in a constructive manner. Our results support the assumption that professional communication in a primary health-care setting should not be seen as a dispensable luxury but as an important part of health delivery. It is hoped that our results help health-care professionals to persuade representatives of political institutions to initiate communication skills training programs in Cameroon.

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Contributors: All authors collaborated on the design of the study; NDL analysed the data; NDL and WL wrote the manuscript with substantial contributions from the other authors. EM organized the data collection; KS performed the statistical analysis.

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