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**RESEARCH**

# Effectiveness of treatment prescribed by GPs: patient assessment

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**Aim:** We investigated patients' impressions of the effectiveness of treatment provided by health centre physicians. Were the patients' expectations met, and were the consultations considered effective? Which factors affected consultation success? **Background:** The study was conducted in 16 municipalities in the Kanta-Häme region Finland in 2004. Primary healthcare services to these municipalities are provided by five health centres. The municipalities' total population was 166 648 (31 December 2003). **Methods:** The data were collected during telephone interviews, supplemented by a mail survey. The study population (2600) was drawn from the Finnish Population Information System by random sampling. A total of 1751 inhabitants participated in the study (response rate: 67%). The respondents were considered able to evaluate treatment effectiveness if they had visited a health centre physician because of an illness or an accident during the past 12 months. Seven hundred and twenty-nine respondents met these criteria. **Findings:** Most respondents (73%) found that their treatment corresponded with their expectations. According to a logistic regression analysis, the factors that best explained whether the patient's treatment expectations were met included the physician's respect for the patient, the consultation duration and the reason for the visit. Of the respondents, 70% thought the consultation had been effective. Factors explaining consultation effectiveness included consultation duration, physician's respect for the patient and whether the consultation was scheduled within three days. In conclusion, the physician–patient consultations seemed to be very good and clearly worth the effort. Notably, we observed that the same factors helped to explain whether the patient's treatment expectations were met, and whether the patient found the consultation effective.

**Key words:** attitude of patients; effectiveness; physician–patient relations; physicians practice patterns; primary health care

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## Introduction

The evaluation and development of elements that are intrinsically connected to primary health care, such as accessibility, coordination, comprehensiveness and longitudinality (Starfield, 1979), should be supplemented with quality-of-care evaluation and development. As several research groups have shown (Stott *et al*., 1997; Aday *et al*., 1999; Campbell *et al*., 2000), effectiveness plays a key role among the many factors affecting overall quality-of-care and treatment outcomes.

Patient experiences are very important in evaluating treatment effectiveness (Donabedian, 1992). Patients can tell us what kind of treatment they expected, what they were afraid of, what happened and what consequences they experienced. The WHO Ljubljana Charter (WHO/Europe, 1999) emphasises that the needs, expectations and wishes of citizens must be considered when planning reforms to the service system.

Studies on the quality and effectiveness of care have usually focused on immediate treatment results in a predetermined age-, gender- or disease-specific

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patient group (Williams *et al*., 1999; Drain, 2001). Reports on studies in which data were collected through direct population interviews are scarce (Wensing *et al*., 1998; Sullivan, 2003). In Finland, such studies have been conducted since the 1980s to investigate issues related to health centre services (Kekki, 1995a; 1995b; 2001).

Previous studies (Smith and Armstrong, 1989; Grol *et al*., 1999; Jung *et al*., 2000; Little *et al*., 2001; Aita *et al*., 2005) have demonstrated that numerous factors (including local culture, organisations and patient characteristics such as age, gender and education) influence patient perceptions of treatment quality and effectiveness. Consultation duration also appears to be associated with patients' impressions of treatment (Kekki, 1995a; 1995b; 2001; Grol *et al*., 1999; 2000).

Several studies were carried out at Finnish health centres in the late 1980s and 1990s to investigate the population's evaluation of the service and treatment they received. In 1987, Kekki (1995b) conducted an interview study at four health centres. Patients aged over 15 years ($N = 1269$) were invited to participate. Kekki also conducted an interview study at 12 health centres in 1991 ($N = 2611$) and another in Helsinki in 1992 ($N = 1917$) (Kekki, 1995a; 2001). All these studies had a response rate of 70% or more.

In their survey in 2000 Jung *et al*. (2000) studied patients' assessments of treatment and found that respect for the patient, meeting the same physician at each consultation, data confidentiality and the feeling that they are respected and listened to were crucial. The opportunity to consult the physician by phone, the time spent in the waiting room and telephone contact were considered less important. According to Grol *et al*. (1999; 2000), who investigated patients' assessments in an international comparative study, respondents had a very positive attitude towards the treatment received. Data confidentiality, listening to patients, consultation duration and prompt service in urgent situations were considered the most positive. Negative assessments were given to the same factors as in Jung *et al*.'s study. In the Finnish sample of the EUROPEP study ($N = 1073$; Grol and Wensing, 2000), 81% of respondents felt they were listened to, 69% received help in dealing with emotional problems, 73% found there was enough time during the consultation and 72% reported rapid symptom relief. Little *et al*. (2001) studied the issues patients considered important in GP consultations and found that the three factors explaining 91% of the variation in a factor analysis were the doctor's communication, partnership and health promotion.

The purpose of our study was to determine how patients perceived the effectiveness of their most recent visit to a health centre physician. Were their expectations met and was the consultation considered effective? Which individual and population factors affected consultation success, and were there any differences between health centres?

## Material and methods

The study was conducted in 16 municipalities in the Kanta-Häme region Finland in 2004. The primary health care services for these municipalities are provided by five health centres. The municipalities' total population was 166 648 (31 December 2003), and 137 365 inhabitants were aged at least 15 years. The sample size was determined using four key questions (Kukkola *et al*., 2005), and the acceptable margin of error was set at 5–20%, giving a sample size of 2600 persons. Municipality-specific random sampling was carried out on all inhabitants in the Finnish Population Information System who had turned 15 years by the end of 2003. A total of 1177 inhabitants participated in telephone interviews (45%). As some did not have a phone, the interviews were supplemented by a mail survey ($N = 574$, 22%). The final study size was 1751 inhabitants and the response rate was 67%. The surveys were carried out by 21 students from the Häme Polytechnic. The method and instrument used in this study were validated in previous studies (Kekki, 1995a; 1995b; 2001).

To evaluate treatment effectiveness, the respondents had to have visited a health centre physician during the past 12 months due to illness or accident. A total of 729 respondents met the criteria for inclusion. The patient characteristics are presented in Table 1.

The study investigated treatment effectiveness using two questions: 'How well did the treatment prescribed for your illness or problem at the health centre correspond to the treatment that, in your opinion, was required?' The response options were 'very well', 'well', 'adequately', 'poorly', 'very poorly', 'don't know'. The second question was:



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**Table 1** Distribution of background variables ($N = 729$)

| Variable | Category | *N* | % |
|---|---|---|---|
| Age (years) | <65 | 548 | 75.7 |
| | >65 | 176 | 24.3 |
| | Total | 724 | 100.0 |
| | Mean (SD, min–max) | 51.9 (17.9, 14–96) | |
| Gender | Male | 263 | 36.3 |
| | Female | 462 | 63.7 |
| | Total | 725 | 100.0 |
| Marital status | Married/cohabiting | 461 | 63.3 |
| | Single/widowed/divorced | 267 | 36.7 |
| | Total | 728 | 100.0 |
| Education | Primary/secondary | 530 | 73.3 |
| | Post-secondary (Bachelor's level) | 126 | 17.4 |
| | Post-secondary (Master's level) | 67 | 9.3 |
| | Total | 723 | 100.0 |
| Health | Good/rather good | 413 | 56.9 |
| | Moderate | 220 | 30.3 |
| | Rather poor/poor | 93 | 12.8 |
| | Total | 726 | 100.0 |
| Chronic illnesses | No | 424 | 58.5 |
| | Yes | 301 | 41.5 |
| | Total | 725 | 100.0 |
| Employment status | Working (full-time/part-time) | 333 | 45.7 |
| | Unemployed | 49 | 6.7 |
| | Other (retired/student/at home with children) | 346 | 47.5 |
| | Total | 728 | 100.0 |
| Currently working | No | 395 | 54.3 |
| | Yes | 333 | 45.7 |
| | Total | 728 | 100.0 |

Results are given as number and % of respondents unless stated otherwise.

'In your opinion, was the treatment prescribed for you effective (eg, the symptoms disappeared)?' The options were 'yes', 'no', 'treatment ongoing', 'don't know'. Both were considered dichotomous variables (the treatment met patient expectations well or very well (yes/no) and was considered effective (yes/no)). The socio-demographic, structural and process variables that might influence treatment effectiveness were treated as dichotomous variables. Structural variables included factors reflecting the structure of the system (eg, the personal physician system, visit type and access to care). Process variables included functional factors (eg, physician's behaviour and consultation duration). The $\chi^2$ test was used as a screening tool when analysing socio-demographic, structural and process variables in terms of treatment effectiveness (Tables 2 and 3). Variables with a corresponding $P$ value of $<0.15$ in a univariate analysis were introduced into the forward stepwise multivariate logistic regression model with an entry criterion of $P < 0.10$. It is good to use large $P$ values because, in univariate models, the variable may be non-significant but, due to complex interrelations, the effect may be significant according to a multivariate model; see, for example, the waiting-time variable ($P = 0.132$ in Table 3 versus $P = 0.044$ in Table 4). The results of all multivariate logistic regressions are given as adjusted odds ratios (OR) with 95% confidence intervals (Tables 4 and 5). Data were analysed by SPSS, version 15.0 (SPSS Inc, Chicago, IL, USA).

## Results

### Correspondence between treatment and expectations

Most (73.3%) of the 715 respondents felt the treatment prescribed for them at the health centre satisfied their expectations well or very well,



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**Table 2** Associations between socio-demographic variables and treatment prescribed at the previous visit to the health centre; whether treatment met the patient's expectations and whether the patient found the treatment to be effective

| Variable | Category | The treatment met the patient's expectations well/very well | | The patient found the treatment effective | |
|---|---|---|---|---|---|
| | | *N* | % | *N* | % |
| Education | Primary/secondary | 518 | 71.6 | 507 | 70.2 |
| | Post-secondary | 192 | 79.2 | 184 | 70.1 |
| | Total | 710 | 73.7 | 691 | 70.2 |
| | | $X^2 = 4.11$, $P = 0.043$ | | $X^2 = 0.001$, $P = 0.978$ | |
| Health (self-assessment) | Good | 407 | 77.9 | 398 | 73.4 |
| | Moderate/poor | 305 | 67.2 | 295 | 65.8 |
| | Total | 712 | 73.3 | 693 | 70.1 |
| | | $X^2 = 10.15$, $P = 0.001$ | | $X^2 = 4.68$, $P = 0.031$ | |
| Chronic illnesses | No | 418 | 76.6 | 408 | 72.5 |
| | Yes | 293 | 68.9 | 284 | 66.9 |
| | Total | 711 | 73.4 | 692 | 70.2 |
| | | $X^2 = 5.12$, $P = 0.024$ | | $X^2 = 2.55$, $P = 0.110$ | |

Results are given as total number of all respondents (*N*) and percent (%) of those who provided a positive answer.
$X^2 = \chi^2$ test (df = 1).

15.2% thought it adequate, 6.4% thought it poor or very poor and 5.0% gave no opinion.

Statistically significant associations were found between the patients' education, health status and chronic illnesses and the degree to which patients felt that the treatment corresponded to their opinions of the treatment needed. Post-secondary education and good health increased, while chronic illnesses reduced the likelihood of satisfied expectations (Table 2).

The variables of personal physician, respect and consultation duration significantly increased the likelihood of good correspondence. Illness as a reason for the visit also tended to increase the likelihood of good correspondence (Table 3).

The final multivariable model (Table 4) demonstrated that the two most influential variables increasing the likelihood of good correspondence between treatment received and treatment expected were respect (OR = 3.73, $P < 0.001$) and consultation duration (OR = 3.43, $P < 0.001$). Other significant factors included post-secondary education (OR = 1.62, $P = 0.037$), good self-assessed health (OR = 1.56, $P = 0.024$), personal physician (OR = 1.77, $P = 0.020$) and shorter (zero to three days) waiting time (OR = 1.60, $P = 0.044$). Illness as the reason for the visit also tended to increase the likelihood (OR = 1.86, $P = 0.053$).

## Treatment effectiveness

The majority (70.1%) of the 696 respondents stated that the consultation was effective, that is, the treatment outcome was good, their symptoms alleviated, their situation improved or their illness resolved. The remaining respondents (10.9%) did not think that the treatment was effective, and 19.0% were unsure or the treatment was ongoing.

The effectiveness of treatment had a statistically significant association with health status, type of visit, respect for the patient, consultation duration and waiting time. Being in good health, the consultation being an initial visit, respect by the physician and sufficient consultation time as well as short waiting time increased the likelihood of the patient finding the treatment effective. Illness as the reason for the visit and having a personal physician also tended to increase effectiveness (Tables 2 and 3).

According to the final multivariate model (Table 5), the two most influential variables increasing the likelihood of effectiveness were



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**Table 3** Associations between structural and process variables and treatment prescribed at the previous visit to the health centre; whether treatment met the patient's expectations and whether the patient found the treatment to be effective

| Variable | Category | The treatment met the patient's expectations well/very well | | The patient found the treatment effective | |
|---|---|---|---|---|---|
| | | *N* | % | *N* | % |
| Personal physician | No/unsure | 116 | 59.5 | 111 | 64.0 |
| | Yes | 597 | 75.9 | 583 | 71.2 |
| | Total | 713 | 73.2 | 694 | 70.0 |
| | | $X^2 = 13.31$, $P < 0.001$ | | $X^2 = 2.32$, $P = 0.128$ | |
| Reason for the visit | Illness | 650 | 74.2 | 633 | 70.1 |
| | Accident | 65 | 64.6 | 63 | 69.8 |
| | Total | 715 | 73.3 | 696 | 70.1 |
| | | $X^2 = 2.75$, $P = 0.097$ | | $X^2 = 0.002$, $P = 0.960$ | |
| Visit type | First visit | 485 | 74.6 | 473 | 74.2 |
| | Repeat visit | 227 | 70.9 | 221 | 61.5 |
| | Total | 712 | 73.5 | 694 | 70.2 |
| | | $X^2 = 1.09$, $P = 0.296$ | | $X^2 = 11.55$, $P = 0.001$ | |
| The GP's respect for the patient[1] | Poor/moderate | 349 | 59.9 | 339 | 61.7 |
| | Good | 342 | 87.7 | 333 | 79.0 |
| | Total | 691 | 73.7 | 672 | 70.2 |
| | | $X^2 = 68.97$, $P < 0.001$ | | $X^2 = 24.13$, $P < 0.001$ | |
| Consultation duration | Sufficient | 616 | 78.1 | 599 | 74.3 |
| | Too short/too long | 98 | 43.9 | 96 | 44.8 |
| | Total | 714 | 73.4 | 695 | 70.2 |
| | | $X^2 = 50.66$, $P < 0.001$ | | $X^2 = 34.43$, $P < 0.001$ | |
| Waiting time for the consultation | 0–3 days | 543 | 74.4 | 530 | 73.2 |
| | ⩾4 days | 158 | 68.4 | 153 | 59.5 |
| | Total | 701 | 73.0 | 683 | 70.1 |
| | | $X^2 = 2.27$, $P = 0.132$ | | $X^2 = 10.69$, $P = 0.001$ | |
| Health centre | Health centre A | 229 | 75.1 | 224 | 73.7 |
| | Health centre B | 47 | 80.9 | 46 | 71.7 |
| | Health centre C | 40 | 57.5 | 37 | 64.9 |
| | Health centre D | 230 | 72.6 | 223 | 71.7 |
| | Health centre E | 162 | 72.2 | 159 | 64.8 |
| | Total | 708 | 73.3 | 689 | 70.4 |
| | | $X^2 = 6.93$ (df = 4), $P = 0.139$ | | $X^2 = 4.33$ (df = 4), $P = 0.363$ | |

Results are given as total number of all respondents (*N*) and percent (%) of those who provided a positive answer.
$X^2 = \chi^2$ test (df = 1).
[1] School grades 4–8 = poor/moderate, 9–10 = good.

**Table 4** Main variables explaining whether the treatment met the patient's expectations well/very well

| Variable | Category | *N* | The treatment met the patient's expectations well/very well | | |
|---|---|---|---|---|---|
| | | | OR | 95% CI | *P* |
| Education | < post-secondary | 482 | 1.00 | | |
| | ⩾post-secondary | 184 | 1.62 | 1.03–2.54 | 0.037 |
| Health (self-assessment) | Poor/average | 277 | 1.00 | | |
| | Good | 389 | 1.56 | 1.06–2.30 | 0.024 |
| The patient had a personal physician | No | 105 | 1.00 | | |
| | Yes | 561 | 1.77 | 1.09–2.87 | 0.020 |
| The GP's respect for the patient[1] | Poor/moderate | 338 | 1.00 | | |
| | Good | 328 | 3.73 | 2.46–5.67 | <0.001 |
| Consultation duration | Too short/long | 89 | 1.00 | | |
| | Sufficient | 577 | 3.43 | 2.08–5.65 | <0.001 |
| Waiting time for the consultation | ⩾4 days | 151 | 1.00 | | |
| | 0–3 days | 515 | 1.60 | 1.01–2.53 | 0.044 |
| Reason for the visit | Accident | 61 | 1.00 | | |
| | Illness | 605 | 1.86 | 0.99–3.47 | 0.053 |

Multivariable logistic regression analysis using the forward stepwise method.
*N* = 666.
[1] School grades 4–8 = poor/moderate, 9–10 = good.

**Table 5** Main variables explaining whether the patient found the treatment to be effective

| | Category | *N* | The patient found the treatment effective | | |
|---|---|---|---|---|---|
| | | | OR | 95% CI | *P* |
| Visit type | Repeat visit | 201 | 1.00 | | |
| | First visit | 449 | 1.60 | 1.09–2.36 | 0.017 |
| The GP's respect for the patient[1] | Poor/moderate | 330 | 1.00 | | |
| | Good | 320 | 2.29 | 1.59–3.32 | <0.001 |
| Consultation duration | Too short/long | 87 | 1.00 | | |
| | Sufficient | 563 | 2.58 | 1.60–4.17 | <0.001 |
| Waiting time for the consultation | ⩾4 days | 146 | 1.00 | | |
| | 0–3 days | 504 | 1.63 | 1.05–2.44 | 0.029 |

Multivariable logistic regression analysis using the forward stepwise method.
*N* = 650.
[1] School grades 4–8 = poor/moderate, 9–10 = good.

respect (OR = 2.29, $P < 0.001$) and consultation duration (OR = 2.58, $P < 0.001$). Other significant factors were first visit (OR = 1.60, $P = 0.017$) and short waiting time (OR = 1.63, $P = 0.029$).

## Discussion

The purpose of this study was to investigate the effectiveness of treatment received at the most recent visit to a health centre physician. Effectiveness was measured as the correspondence between treatment received and treatment expectations and as the benefits of the treatment obtained.

The respondents' opinions regarding treatment effectiveness were mostly positive. Two-thirds felt that the treatment prescribed by the physician was effective (symptoms alleviated, situation improved or illness resolved). The majority (73%) also stated that their treatment met their expectations well or very well.

The main findings of this study are consistent with previous studies. In Kekki's study in 1987 (Kekki, 1995b), 81% of the respondents stated



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that their treatment met their expectations very well or fairly well. They also considered the treatment to be effective. In 1991 and 1992, Kekki's studies (1995a; 2001) found that 84% and 88% of the respondents felt the treatment prescribed by health centre physicians met their treatment expectations very well or fairly well. Most respondents in the 1991 and 1992 studies (81% and 85%, respectively) also felt that the treatment was effective. Thus, scheduling a consultation with a health centre physician was clearly worthwhile.

In one extensive international comparative study (Grol *et al*., 1999), patients experienced their consultations with GPs to be generally positive. In previous studies (Grol *et al*., 1999; 2000; Jung *et al*., 2000), patients had considered it important that they feel respected, their concerns are listened to, there is sufficient time for the consultation and they see the same physician. In the EUROPEP study (Grol and Wensing, 2000), Finnish patients felt that they obtained rapid symptom relief, were listened to and received support for emotional problems. They also felt that enough time was available for the consultation. In this study, respect and consultation time available appear to explain treatment effectiveness to a certain extent. The type of consultation (initial or repeat) and prompt access were also associated with patient-experienced benefits.

Surprisingly, factors such as the respondents' age, gender, education, employment and marital status had no association with perceived treatment effectiveness at all, though earlier research (Kekki, 1995a; 1995b; 2001; Wensing *et al*., 1998; Grol *et al*., 1999; Jung *et al*., 2000) has shown an association between these factors and the quality of care. However, organisational and structural factors (eg, access to care and the personal physician system) and process factors (eg, physician behaviour and consultation duration) suggested an association – in some cases a statistically significant one – with the effectiveness of treatment.

There were some differences in treatment effectiveness between health centres. Similar variations were also seen with the other factors investigated (Kukkola *et al*., 2005). Health centres with poor patient-estimated treatment effectiveness also displayed deviating results in terms of access to care, GP behaviour and public health promotion. In the future, it would be worthwhile investigating which reasons explain the inter-organisational differences. Identifying these would help develop activities in the right direction.

The respondents were asked whether they had a permanent personal physician at the health centre. Two-thirds (76%) with personal physicians reported that the treatment prescribed at the health centre corresponded to the treatment that, in their own opinion, was required, that is, the treatment met their expectations. However, it should be recalled that the respondents were not asked whether the physician treating them at that visit was their personal physician. The results should be approached with caution.

Our study has some limitations. First, because the sample consisted of a rather large population in the Kanta-Häme district, the survey was time-consuming and labour-intensive. Contacting the respondents was difficult. Some phone numbers were invalid, some respondents did not have a phone or could not be contacted because they were abroad, in institutional care or for other reasons. The last included communication problems, poor memory, lack of interest and poor health. It is possible that some of those with the greatest need and poor experiences did not answer the questionnaire. In a previous patient satisfaction study (Ehnfors and Smedby, 1993) the authors had noticed that patients who were old or confused, had language difficulties or were seriously ill, dropped out easily of the sample. In our study, those not interviewed were sent the questionnaire by mail.

Second, the questions asked were clear and simple and they could not necessarily elicit complex attitudes to the quality of care. According to Williams' unstructured in-depth interview study (Williams *et al*., 1998) experiences described by users in positive or negative terms did not necessarily correlate with the user's evaluations of the services. Positive or negative experiences may only be correlated with positive or negative evaluations of services when the concepts of duty and culpability are taken into account. According to Williams and others understanding individual's experiences of health services will require a more detailed understanding of people's social circumstances and health beliefs. On the other hand, the advantage of a structured interview in quality assessment studies is the opportunity to make the questions clearer and more precise. Interviews also make patients feel that the researchers are genuinely interested in their opinions.

Third, retrospective capture of views about the quality of care runs the risk of recall bias. In the visit-specific satisfaction study (Jackson *et al*., 2001) immediately after the visit satisfaction was most strongly related to measures of doctor–patient communication whereas by two weeks and three months the outcome of patients' presenting symptom has an increasingly greater effect. Studies on the quality and effectiveness of care have usually focused on immediate treatment results. The purpose of our study was to determine how patients perceived the effectiveness of their most recent visit to a health centre physician. Were their expectations met, and was the consultation considered effective? The study was not visit-specific, nor was the focus on patient satisfaction. Time delay in eliciting experience has been useful if we are interested in the effectiveness of care.

The strengths of our study include its perspective of effectiveness of care, large sample size covering all people in a certain area, random population sample, use of an instrument which had been already validated many times in other surveys.

To evaluate the generalisability of the study results, the age, gender and employment status distributions of the sample were compared with the population of the entire Kanta-Häme region. The match was fairly good. Those under 35 years were under-represented in the sample. The proportion of pensioners was slightly higher than in the whole population. The proportion of female respondents was 55% (52% in the population). Of the respondents 47% were employed, compared with 52% in the whole population.

According to this study, patients have a positive attitude towards consulting a GP and find that they benefit from the consultations. In terms of effectiveness, simple basic matters, such as the physician's behaviour, sufficient time for the patient and easy access, were the critical factors, together with the perceived benefit from care. It is very important for the patient that the physician acts appropriately during the consultation. This is something that should be focused on and monitored.

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