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COMMUNICATION

# Medical Students' Attitudes Towards Concordance in Medicine Taking: Exploring the Impact of an Educational Intervention

J. E. THISTLETHWAITE[1], D. K. RAYNOR[2] & P. KNAPP[3]

[1]*Academic Unit of Primary Care, School of Medicine, University of Leeds, UK,* [2]*Pharmacy Practice and Medicines Management Group, University of Leeds, UK and* [3]*Pharmacy Practice and Medicines Management Group, University of Leeds, UK*

ABSTRACT **Background and objectives:** *Concordance has been suggested as a new way of describing the agreement about medicine taking during the consultation process. The aim is a decision on management agreed on by both doctor and patient. As such it has strong links with shared decision-making and patient partnership. In order to encourage doctors to adopt a concordant model, we need to foster a positive attitude towards the concept. We decided to investigate the attitudes of first and second year medical students towards concordance as a base for further educational interventions.*
**Setting:** *The School of Medicine, Leeds University.*
**Methods:** *We administered the Leeds Attitude toward Concordance scale (LATCon) to first and second year medical students at the beginning of the academic year, and to the same second year students after they had completed a written exercise relating to concordance.*
**Results:** *The response rate was over 80% for each group. There was no difference in the attitudes towards concordance of the first years and the second years prior to the intervention. After they had completed the exercise, the second years' attitudes towards concordance improved by a small but significant amount.*
**Conclusions:** *A paper-based exercise with questions focusing on concordance and based around cases appears to improve medical students' attitudes towards the concept. This exercise needs to be followed up with skills training and observation of role models in order that the attitudes of the students translate into practice once they are qualified.*

KEYWORDS *Concordance, medicine taking, undergraduate medical education, shared decision making.*

Author for correspondence: Jill E. Thistlethwaite, BSc, MB, BS, MMEd, MRCGP, DRCOG, ILTM, Senior Lecturer in Community-Based Education, Academic Unit of Primary Care, 20 Hyde Terrace, Leeds LS2 9LN, UK. Tel: 0113 343 4185. Fax: 0113 343 4181. E-mail: j.e.thistlethwaite@leeds.ac.uk

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## Introduction

About 50% of patients with chronic diseases do not take their medication as prescribed in fully therapeutic doses (Sackett & Snow, 1979) and so medication compliance is an important issue for medical students to discuss. Students are usually introduced to the concept of compliance during pharmacology modules. In this context, compliance has been defined as the extent to which a patient's actual history of drug taking corresponds to the prescribed regimen (Urquhart, 1996). The idea that a patient may be compliant or non-compliant due to various factors may also be discussed during primary care attachments. However, in communication skills courses, students practise the skills of explaining to patients and are asked to adopt a patient-centred approach (Levenstein *et al*., 1986) to patient care. This patient-centred approach does not fit well with the concept of the 'compliant' patient, who follows 'doctor's orders' and does not take an active role in planning and managing his or her own care (McWilliam & Brown, 1995).

Patient partnership is also a strategy that aims to equalise relationships between health professionals (Coulter, 1999). Integral to this partnership is the concept that decision making about management, which may involve the prescribing of drugs, should be shared between the two people in the consultation (Elwyn & Charles, 2001). Even if the doctor has a paternalistic style and controls the decision making process during the consultation, patients rarely relinquish their decision making role entirely (Deber *et al*., 1996), and may decide later not to follow the doctor's instructions, perhaps including not taking their medicine as prescribed. The word 'concordance' has been suggested as a new way of describing the consultation process as a negotiation between equals, that results in a decision on management agreed on by both health professionals, eg doctor and patient (RPSGB, 1997). This management decision may be an agreement not to prescribe medication, if the patient does not wish to take it. On the other hand, sharing information with patients about the advantages and disadvantages of drug treatment should ensure that once a decision to prescribe has been made, the patient will take that medication. Thus ultimately, not only is a consultation more open, but there will be less wastage of unwanted and untaken medicines.

Despite the shift to thinking about concordance rather than compliance, there is little evidence to suggest that health professionals, including doctors, have positive attitudes to concordance that translates into practice. Our previous study showed that while newly qualified doctors, nurses and pharmacists tend to have favourable attitudes, a significant minority do not, suggesting that a number still adhere to the orthodox paternalistic approach to prescribing (Raynor *et al*., 2001).

It is logical when teaching medical students about the patient-centred approach to history taking, which includes asking patients about their ideas, concerns and expectations about treatment, that they should also learn about

the importance of patients' health beliefs about medicine taking. The fact that many people do not take their medication properly, if at all, comes as a shock to many medical students in our experience. The attitudes of students to concordance are important, as they are the prescribers of the future. We should be encouraging them to adopt the patient-centred and concordant model in their patient interactions.

The aim of this study was to investigate students' attitudes towards the concept of concordance, including the idea of the consultation as a negotiation between equals and the importance of the patient's decision. We wished to see whether their attitudes change in response to learning and writing about the patient-centred method in their first year and following a more specific course about the concept during second year in order to plan further educational interventions to promote the concordance model.

## Method

The Leeds Attitude to Concordance scale (LATCon) was developed and validated in 2001 (Raynor *et al*., 2001). It consists of a 12-item scale (Box 1). The respondent scores each item on a four point Likert scale: strongly disagree (0), disagree (1), agree (2), strongly agree (3). The total maximum score is therefore 36. A mean item score of between 2 and 3 indicates that the respondent tends to 'agree' with the concept of concordance, while an average score below 2 suggests that he/she does not. We administered the LATCon to all first year medical students in the first month of their studies, to all second year medical students in the first month of their second year and again to the same second year cohort at the end of the second year during the academic year 2001–2002.

At Leeds University School of Medicine medical students learn about the patient-centred approach in their first year and this model is referred to extensively in their personal and professional development (PPD) course, which includes communication skills. Concordance is not mentioned specifically in the first year of PPD but students are asked to explore patients' experience of health care and their involvement in decision making during the early patient contact in the first term.

As part of their assessment of PPD the second year students complete a Personal Development Exercise at the end of their second term. This exercise counts for one-fifth of the marks for PPD. PPD as a core unit was introduced within the new Leeds undergraduate curriculum in 1999. The second year Personal Development Exercise was introduced in 2000. The students who completed the LATCon were the second cohort of second years to complete this exercise.

The exercise consists of a series of case vignettes and questions relating to these, as well as asking for reflection on the course. The students are

| | Strongly disagree | Disagree | Agree | Strongly agree |
|---|---|---|---|---|
| 1. The consultation between the doctor & patient should be viewed as a negotiation between equals | | | | |
| 2. Doctors should respect their patients' personal beliefs & how they cope | | | | |
| 3. The best use of medicine is when it is what the patient wants and is able to achieve | | | | |
| 4. Just as prescribing is an experiment carried out by the doctor, so too is medication taking an experiment carried out by the patient | | | | |
| 5. Doctors should give patients the opportunity to talk about their thoughts about their illness and negotiate how it is treated | | | | |
| 6. Better health would follow from co-operation between doctors and patients | | | | |
| 7. A high priority in the consultation between doctor and patients is to establish agreement about the need for medicine | | | | |
| 8. Doctors should be sensitive to patient desires, needs and abilities | | | | |
| 9. Doctors should try to help patients to make as informed a choice as possible about benefits and risks of alternative treatments | | | | |
| 10. During the doctor-patient consultation, it is the patient's decision that is most important | | | | |
| 11. Doctors should be more sensitive to how patients react to the information they give | | | | |
| 12. Doctors should try to learn about the beliefs their patients hold about their medicines | | | | |
| | Strongly disagree | Disagree | Agree | Strongly agree |



**Box 1.** 12 item LATCon Scale

encouraged to take a patient-centred approach to the questions. Two of the questions (Numbers 1 and 3) are related to concordance and medicines management issues (Box 2). Hypertension was chosen as one topic as it has served as a model for compliance research and is a common condition (Dunbar-Jacob & Dwyer, 1991). To help them with the exercise, the students are referred to two articles about concordance (Mullen, 1997; Marinker, 1997).

Facilitators handed out the questionnaires at the beginning of the year in one of the PPD tutorial sessions, accounting for the high response rate of over 90% (see results section). The questionnaire at the end of the second year was handed out to students when they came to collect their marked Personal Development Exercise, nine weeks after submitting it for assessment. Those students who did not attend to collect their work were e-mailed a questionnaire and invited to reply by e-mail. The questionnaires were returned anonymously; those questionnaires, which were returned by e-mail, were printed off and not identified by sender. The students were asked to fill in the questionnaires according to how they felt and, as they returned the forms anonymously, they were reassured that individual replies could not be traced to check if students were demonstrating desirable attitudes.

1. Mr Smith, a 68-year old man, has been attending his GP's surgery and has been found to have high blood pressure on three occasions (average > 150/106). He smokes 15 cigarettes a day and his cholesterol level is 6.8. The guidelines suggest his hypertension should be treated.
   - 1.1 How would you explain this to him and why would you do it in this way?
   - 1.2 Mr Smith agrees to treatment with a beta-blocker (standard first-line treatment) and to try and stop smoking. He is prescribed 1 month's treatment and asked to return then for review. You next see him 6 months later. He has not taken his treatment, his blood pressure is still high and he is still smoking.

     Give 3 reasons, with evidence from the literature, why Mr Smith might not have 'complied' with his treatment.
3. A patient is prescribed a drug to help control his Type 2 diabetes and he is advised to lose weight. He does not take the tablets regularly and only manages to lose 2lb in 2 months. The doctor informs him he is not complying with his medication. The patient feels he has not been given adequate information about his condition.
   - 3.1 There is a trend nowadays to speak of the concept of 'concordance' rather than compliance when discussing drug prescribing and taking. Try and find 3 papers/articles/chapters that discuss concordance (and compliance) and use them to discuss what the concept means.
   - 3.2 In what way could the doctor use this information about concordance in the consultation with this patient?

**Box 2.** Personal development exercise: questions relating to concordance

*Statistical Methods*
Comparisons between both total scale scores and individual scale items from different time points were made using parametric analyses (i.e. the *t*-test). Since the *t*-test can be susceptible to non-normality of distributions, the findings were confirmed by non-parametric analyses (using the Mann-Whitney test).

## Results

The response rates were high: first years 92.5% (236/255); second years (start) 80% (151/189); second years (end) 84.5% (160/189).

*Year 1 Students*
Of the 236 returned questionnaires, 19 (8.0%) had missing items; therefore the analysis was based on 217 completed questionnaires. The mean score was 26.6 (standard deviation 3.1), median score 27 (range 19–34). The item mean was 2.2. The distribution of mean scores was normal. Of the 19 missing total scores, mostly single items were left uncompleted. The item most often left was item 4 (10 participants), followed by item 3 (4 participants). Cronbach's Alpha (test of internal reliability) was 0.630. Individual item means ranged from 1.5 to 2.8 (Table 1).

*Year 2 Students (Start Data)*
Of the 151 returned questionnaires, 12 (7.9%) had missing items; therefore the analysis was based on 139 completed questionnaires. The mean score was 26.2

**Table 1.** Comparison of items means across the three sets of results

| | Mean (standard deviation) | | |
|---|---|---|---|
| Item | Year 1 | Year 2 (start) | Year 2 (end) |
| 1 | 2.0 (0.7) | 2.1 (0.7) | 2.4 (0.6) |
| 2 | 2.8 (0.4) | 2.6 (0.5) | 2.7 (0.5) |
| 3 | 1.8 (0.7) | 1.9 (0.7) | 2.1 (0.6) |
| 4 | 1.5 (0.7) | 1.6 (0.7) | 1.9 (0.7) |
| 5 | 2.6 (0.6) | 2.6 (0.5) | 2.6 (0.5) |
| 6 | 2.6 (0.5) | 2.5 (0.5) | 2.6 (0.5) |
| 7 | 1.9 (0.6) | 1.8 (0.7) | 1.9 (0.6) |
| 8 | 2.7 (0.5) | 2.6 (0.5) | 2.6 (0.5) |
| 9 | 2.6 (0.5) | 2.4 (0.5) | 2.5 (0.5) |
| 10 | 1.8 (0.7) | 1.7 (0.6) | 1.9 (0.7) |
| 11 | 2.2 (0.5) | 2.3 (0.5) | 2.3 (0.5) |
| 12 | 2.1 (0.5) | 2.2 (0.5) | 2.4 (0.6) |
| Total | 26.6 (3.1) | 26.2 (3.6) | 28.1 (4.1) |

(standard deviation 3.6), median score 26 (range 19–35). The item mean was 2.2. The distribution of mean scores was normal. Of the 12 missing total scores, all had left a single item uncompleted. The item most often left was item 4 (5 participants), followed by items 3 and 8 (2 participants each). Cronbach's Alpha was 0.746. Individual item means ranged from 1.6 to 2.6 (Table 1).

*Comparison of Year 1 and Year 2 Students at the Start of their Respective Years*

The total scale scores *t*-test showed no statistical difference between the two years ($t = 1.08$, df = 354, $p = 0.28$).

*Year 2 Students (End Data)*

Of the 160 returned questionnaires, 14 scales (8.7%) had items left uncompleted; therefore the analysis was based on 146 completed questionnaires. The mean score was 28.1 (standard deviation 4.1), median score 28 (range 20–36). The item mean was 2.3. The distribution of mean scores was normal, with a slight positive skew. There were14 missing total scale scores, all had 1 or 2 items left uncompleted. The item most often left was item 10 (10 participants), followed by item 4 (3 participants). Cronbach's Alpha was 0.825. Individual item means ranged from 1.9 to 2.7 (Table 1).

*The Comparison of Year 2 Start and End Data*

The start year mean was 26.2 (95% confidence intervals 25.6 to 26.8); the end year mean was 28.1 (95% confidence intervals 27.5 to 28.8). There was an equal distribution of variances and each distribution was approximately normal, so a comparison was made using the independent samples *t*-test: $t = 4.179$, df = 283. Therefore, the mean LatCon score of the students increased by almost 2 points, on average, an effect size of 7.2%. This difference was statistically significant at the $p < 0.001$ level.

*Item by Item Comparisons*

In order to see whether the increased total scale scores were the result of increases on most or few items, the mean scores of each item were compared by *t*-test (Table 2). The variances were unequal for four items (items 4,6,7,12) and the findings were confirmed by non-parametric analyses (the Mann-Whitney test). The mean score of none of the items decreased between year start and year-end. The means scores of five of the items increased statistically significantly (at the 5% level): items 1, 4, 7, 10 and 12. Item 3 was close to statistical significance ($p = 0.09$).

In order to check if the increase in scores across the year was due to a general increase across the items, rather than being due to a dramatic increase in a few items, we looked at the proportion of students who scored a 2 or 3 (i.e. agree or strongly agree) on each item, and then compared these proportions for start and end year data (Table 3). The results appear to show a meaningful shift

**Table 2.** Item by item comparisons, year 2 start and end

| Item | Means | (start, end) | *t*-value | significance | (df) |
|---|---|---|---|---|---|
| 1 | 2.1 | 2.4 | 4.34 | *** | 308 |
| 2 | 2.6 | 2.7 | 1.17 | ns | 309 |
| 3 | 1.9 | 2.0 | 1.71 | ns | 305 |
| 4 | 1.5 | 1.9 | 5.02 | *** | 301 |
| 5 | 2.6 | 2.6 | 0.06 | ns | 309 |
| 6 | 2.6 | 2.6 | 1.23 | ns | 308 |
| 7 | 1.8 | 2.0 | 2.96 | ** | 308 |
| 8 | 2.6 | 2.6 | 0.61 | ns | 307 |
| 9 | 2.4 | 2.5 | 1.58 | ns | 308 |
| 10 | 1.7 | 1.9 | 2.42 | * | 298 |
| 11 | 2.2 | 2.3 | 1.33 | ns | 308 |
| 12 | 2.2 | 2.3 | 2.10 | * | 308 |

ns not significant ($p > 0.05$).
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

**Table 3.** Percentage of students scoring *agree* or *strongly agree* on each item (year 2)

| Item | Year start | Year end |
|---|---|---|
| 1 | 84 | 95 |
| 2 | 99 | 99 |
| 3 | 72 | 82 |
| 4 | 54 | 78 |
| 5 | 99 | 99 |
| 6 | 97 | 98 |
| 7 | 67 | 81 |
| 8 | 98 | 98 |
| 9 | 97 | 97 |
| 10 | 67 | 69 |
| 11 | 93 | 95 |
| 12 | 95 | 94 |

on items 1, 3, 4 and 7, a similar, but not identical, pattern to that seen on the *t*-test (which used the arithmetic mean). Taking all these results together, it is apparent that the LatCon attitude scores increased significantly over the course of year 2.

*Comparison of Items Means Across the Three Sets of Results*

The lowest scoring items at the start of both first and second year (items 3, 7, 10) were those which appear more controversial, putting the patient at the

centre of the decision making process, and item 4 which talks in terms of experimentation. These items also scored low in the end of second year results though the scores become higher. Those items which are less controversial and which are covered in communication skills courses (2,5,6,8,9) scored high in all three sets of results (Table 1).

## Discussion

An understanding of patients' behaviour, as regards medicine taking and the influences on it such as health beliefs and doctor behaviour, is fundamental to the doctor–patient relationship. Doctors need to shift the emphasis away from encouraging patients to take their prescribed medicine towards trying to understand how they can contribute to the decisions that patients make about taking their medication (Vermeire *et al.*, 2001). Getting medical students to start thinking about the patient's role in decision making and the concept of concordance has implications as regards the future quality of patient care, given that such medical students are tomorrow's doctors with responsibility for the treatment of patients. A simple exercise relating to prescribing and management appears to have changed the attitudes of the students to these issues by a statistically significant, although relatively small amount.

Medical students at the start of their undergraduate education appear to have reasonably positive attitudes to the patient-centred approach, scoring highly on items that mention respect for patients and sensitivity. Their attitudes to other concordance features such as the patient's decision being important are less favourable. According to our work comparing two cohorts of students, these attitudes do not appear to change after 1 year's study, which included patient contact and communication skills training. However after an exercise which involves reading specifically about concordance and answering questions relating to cases in which patients have 'complied' poorly with doctors' advice, students' attitudes to concordance improve.

In comparing the attitudes of the first years to those of the second years, we assume that the two populations of students are broadly similar. They came through the same selection process for medical school and have similar demographics (gender and age). In comparing the second year students at the start and end of the year it is possible that the scores increased as a function of the same students completing the questionnaire twice. We have not measured the questionnaire's test–retest reliability and so this explanation is a possibility. However the length of time between the two questionnaires (8 months) will have minimized this effect.

It would be interesting to track the students' attitudes towards concordance through until qualification and beyond to see if their exposure to role models and patients in more clinical settings affects them. Of course this questionnaire only measures attitudes and not behaviour. The questionnaire has good internal

reliability (Raynor *et al*., 2001) but its construct validity can only be assessed by seeing how its attitude scores predict behaviour in practice. To check if students and doctors actually practise concordance would require very different methods. A study of first year residents in South Carolina suggests that newly qualified doctors are willing to give control to patients in theory but change behaviour to become more paternalistic when describing what they would do in concrete cases in practice (McKeown *et al*., 2002). Theoretical training needs to be followed up with work-based practice and observation of concordance in action.

As medical educators we need to promote a shared decision making model and the concept of concordance to our students in order to improve patient outcomes and motivate patients to become partners in their own health care.

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