The impact of back school research on the beliefs of health care professionals: A randomised survey of general practitioners and physiotherapists

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Back schools offer an education and skills programme in a group setting and are primarily directed towards pain management. Randomised clinical trials including one carried out by our research group do not show back schools to be very effective. These research findings are summarised in a short overview. In order to determine the impact of this overview on health care practice, we conducted a randomised survey of general practitioners and physiotherapists (n = 170). The main aim was to see to what extent they would change their belief in the efficacy of back schools when confronted with the empirical evidence. After stratification for prior belief and profession, the participants were randomly divided into two groups: one was shown the short overview of the empirical evidence (n = 82) and the other was not (n = 88). Subsequently, they had to state their belief in the efficacy of the back school again. In the experimental group, 52% reported reduced confidence in back schools, compared to 22% in the control group. It can be concluded that the short overview led to a reduction in confidence in the expected direction, although somewhat smaller than was anticipated. Future studies should further elucidate the determinants of the impact of empirical evidence on health care practice.

INTRODUCTION

All too often, researchers in the field of health education seem to assume that it is enough to carry out well-designed studies into the efficacy of educational programmes if one wishes to improve actual health care practice. In fact, the results of health education research are very often not – or inadequately – put into practice. Researchers should therefore conduct additional studies so as to discover if people working in the field of health care and health education think and act in accordance with the results of (scientific) research. In this article, an example of such research, regarding the impact of back school research on the beliefs of health care practitioners, is described.

Back schools offer an education and skills programme in a group setting, and are primarily directed towards pain management. Previous studies have not shown back schools to be very effective in the treatment of patients with non-
specific back pain (Keijsers, Bouter and Meertens, 1990a). However, it can be argued that a multidimensional approach to back pain is required; that is, in addition to physical factors, psychosocial factors are also involved in both the aetiology and prognosis of low back pain (Nachemson, 1979; Turk and Flor, 1984). Therefore, all of those elements which we felt ought to be included in a back school information and training programme were introduced in Maastricht (Keijsers, Steenbakkers, Gerards and Meertens, 1990b). However, a randomised clinical trial at the Maastricht back school showed no surplus value compared with a waiting list control group (Keijsers et al, 1990c).

The main results from the existing literature and from our own study concerning the efficacy of back school treatment are summarised in a short overview (see accompanying article by Keijsers et al). In order to estimate the impact of back schools on health care practice, we conducted a randomised survey of general practitioners and physiotherapists familiar with back school treatment. The main aim of the research was to discover to what extent these practitioners would change their beliefs in the efficacy of back schools once confronted with the empirical evidence. In addition to this, the influence of four independent variables was studied: (1) initial (prior) belief, (2) profession, (3) reliance on results of scientific back school research and (4) involvement in the planning and execution of back school treatment.

**METHODS**

The Netherlands Institute of Primary Health Care (NIVEL) registers all practitioners working in primary health care in the Netherlands. The institute provided us with a random sample of 200 physiotherapists (PTs) and 200 general practitioners (GPs) who were invited by post to state their belief in the efficacy of back school treatment by answering the following question: 'Back school treatment is effective for patients suffering from non-specific back pain'. They were requested to do this on a 10-point visual analogue scale (VAS) ranging from 5 to 95%, with the anchor words ‘back school treatment is absolutely not effective’ and ‘back school treatment is very effective’. Similarly, they were invited to state how much they rely on the results of scientific research: the anchor words in this case were ‘absolutely no reliance on results of scientific back school research’ and ‘strong reliance on results of scientific back school research’. Furthermore, they were asked whether in their everyday practice they are involved in the planning and execution of back school treatment. Those who did not respond within 3 weeks received a reminder. The respondents were stratified according to profession (PT, GP) and initial belief (cut-off points 50 and 70%), and within these six strata they were randomly divided into an experimental and a control group. The experimental group received a copy of the overview reproduced in the accompanying article by Keijsers et al. All of the respondents were then once again asked to state their belief in the efficacy of back school treatment. Our hypothesis was that, on average, the practitioners in the experimental group would believe less in back school treatment after seeing the overview. We expected the views of the majority of the practitioners in the control group not to have altered. The practitioners in the control group, who had not received the overview, were promised that they would be able to see it as soon as they gave us their second answer. Those who did not respond within 3 weeks received a reminder. Those GPs and PTs who initially stated not to be familiar with back school treatment, and those who did not state their belief in the efficacy of back school treatment twice, were excluded from the analysis.

**DATA ANALYSIS**

In order to detect any change in belief concerning the efficacy of back school treatment, the initial beliefs (B0) of the subjects in the experimental and control groups were compared with their revised beliefs (B1). To determine the influence of the four independent variables (initial belief, profession, reliance on scientific back school research, and involvement in back
school treatment), the data were analysed at different levels for these variables (stratified analyses). In addition, the impact of the overview was expressed quantitatively as a likelihood ratio (LR), which was calculated by dividing the level of belief after reading the overview (or not) by that before reading it. For example, if the level of belief changed from 60 to 35%, the corresponding likelihood ratio would be equal to \( \frac{0.35}{0.65} \times \frac{0.60}{0.40} = 0.36 \). A LR of 1 indicates no impact; a LR between 0 and 1 indicates that \( B_1 < B_0 \); a LR higher than 1 indicates that \( B_1 > B_0 \) (Knipschild, 1989; Knipschild and Leffers, 1990).

**RESULTS**

The 400 GPs and PTs were invited to state their belief in the hypothesis that back schools are effective for patients suffering from non-specific back pain. Initially, of the 400 subjects contacted, 117 did not respond, 71 stated that they were unfamiliar with back school treatment and 9 did not state their initial belief, although they were familiar with back school treatment. Thus, 203 subjects were randomly assigned to an experimental \((n=103)\) and a control group \((n=100)\). Of these, 21 subjects in the experimental group and 12 subjects in the control group did not revise their beliefs when asked. Ultimately, 170 randomised subjects stated their belief in the efficacy of back school treatment on two occasions. The mean time between occasions was approximately 10 weeks.

Figure 1 shows the distribution of the initial and revised beliefs of the experimental and control groups. Each dot represents a single respondent. As can be seen, most dots for the experimental group fall below the diagonal \((LR = 1)\), indicating a reduced belief in the efficacy of back school treatment.

Figure 1 shows, for example, that in both groups, 43 subjects rated their initial belief between 55 and 65%. Of these 43 subjects in the experimental group, 17 revised their belief downwards, whereas 13 revised it upwards. In all, 13 subjects did not alter their belief. In the control group, 6 of the 43 subjects revised their belief downwards, 15 revised it upwards and 22 did not change their belief.

The curved lines in Fig. 1 indicate the median \((p50)\) and second \((p25)\) and fourth \((p75)\) quartile likelihood ratios. The dotted line for the experimental group in Fig. 1a indicates a likelihood ratio equal to 1. For the experimental group, the actual median LR was 0.65, with \(p25\) and \(p75\) equal to 0.28 and 1.25 respectively. The median LR for the control group was 1.00, with \(p25\) and \(p75\) equal to 0.70 and 1.50 respectively.
Changes in belief were obtained for both groups by subtracting the initial level of belief from the revised level of belief. The distribution of these changes in the experimental group (mean change —10%) was significantly different from that in the control group (mean change 1.6%) (t-test, P<0.05). The mean change among the control group suggests a slight increase in the level of belief in back schools.

Figure 2 shows the proportion of subjects in the experimental and control groups with a revised belief (B1) lower than, equal to and higher than their initial belief (B0). More than half the subjects in the experimental group had B1 < B0; in the control group, almost half of the subjects had B1 = B0.

For both groups, Table 1 shows the percentage of subjects with a revised belief (B1) lower than their initial belief (B0), for different levels of the independent variables. The differences between the percentages for both groups for each level are also given. With respect to initial belief and reliance on results of scientific back school research, the stratification of the variables is based mainly on getting sufficient numbers of subjects within each level, as well as on interesting prior distinctions. The differences provide an indication of the impact of the overview after adjustment for those respondents changing their belief in the expected direction (B1 < B0) but without having seen the overview. Figure 2 shows that this difference is 30% for the total population.

It turns out that large differences between the experimental and control groups are most apparent for those practitioners with a high initial level of belief (75–95%) and for participants who strongly rely on the results of scientific back school research. The effect of profession or personal involvement in back school treatment seems to be of lesser importance.

**DISCUSSION**

To date, research has not been able to show clearly the efficacy of back schools. In our randomised survey, the impact of empirical evidence on health care practice was estimated. It was expected that those GPs and PTs confronted with our short overview of research results (see accompanying article by Keijsers et al), would revise their belief in the efficacy of back school treatment downwards. The GPs and PTs in the control group did not receive a copy of the overview and, consequently, they were not expected to alter their beliefs.

In the control group, 34% revised their belief upwards and 22% revised it downwards. Among those subjects with a relatively low initial belief (≤45%) in back school treatment, 13 of 14 revised their belief upwards. On the other hand, of the 31 subjects with a relatively high initial belief (≥75%) in back school treatment, 12 revised their belief downwards. Regression to the mean seems to be partly responsible for these effects.

Surprisingly, of the experimental group, 26% revised their belief in the efficacy of back school treatment upwards, despite exposure to the short overview of mostly ‘negative’ research results. Moreover, 22% did not change their level of belief. Only 52% had B1 < B0, which cannot be described as an overwhelming effect. The median likelihood ratio was 0.65. A possible explanation might be sought in the compliance with the intervention among the subjects in the experimental group, i.e. how thoroughly did they read the short overview? A second possible explanation of the limited impact of the overview might be the amount of prior knowledge the practitioners possessed with regard to the effi-
Table 1
Proportion of subjects in the experimental and control groups who had a revised belief (B1) lower than their initial belief (B0) for different levels of four independent variables

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Experimental</th>
<th>Control</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n B1 &lt; B0</td>
<td>n B1 &lt; B0</td>
<td></td>
</tr>
<tr>
<td>BO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-45%</td>
<td>11 36%</td>
<td>14 7%</td>
<td>29%</td>
</tr>
<tr>
<td>55-65%</td>
<td>43 40%</td>
<td>43 14%</td>
<td>26%</td>
</tr>
<tr>
<td>75-95%</td>
<td>28 79%</td>
<td>31 39%</td>
<td>40%</td>
</tr>
<tr>
<td>Profession</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP</td>
<td>31 55%</td>
<td>31 29%</td>
<td>26%</td>
</tr>
<tr>
<td>PT</td>
<td>51 51%</td>
<td>57 17%</td>
<td>34%</td>
</tr>
<tr>
<td>Reliance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-55%</td>
<td>21 48%</td>
<td>22 27%</td>
<td>21%</td>
</tr>
<tr>
<td>65-75%</td>
<td>33 51%</td>
<td>40 25%</td>
<td>26%</td>
</tr>
<tr>
<td>85-95%</td>
<td>28 57%</td>
<td>28 11%</td>
<td>46%</td>
</tr>
<tr>
<td>Involved</td>
<td>11 64%</td>
<td>11 36%</td>
<td>28%</td>
</tr>
<tr>
<td>Not involved</td>
<td>71 51%</td>
<td>77 19%</td>
<td>32%</td>
</tr>
</tbody>
</table>

cacy of back schools. Those subjects who had already read detailed research regarding back school treatment, may have been less likely to change their minds after reading our overview. A third explanation for the disappointing effect might be that a change in belief cannot be expected immediately after reading the overview. A study of the long-term impact of the overview may reveal a larger effect. A fourth explanation of our findings could be that health care practitioners are more inclined to base their opinions about whether a treatment is effective on their everyday experience. A study by Boissel (1989) revealed that 44% of GPs prescribe treatments on the basis of practical experience. Founding an opinion on practical experience is, however, not consistent with the finding that most of the GPs and PTs in our study reported that they relied moderately to heavily on the results of scientific research. A fifth possible explanation, therefore, could be that the practitioners lack methodical training, which is a necessary condition for understanding scientific articles and for acting in accordance with the findings presented. On the other hand, it could also be argued that researchers lack the skill to write intelligibly about scientific research and its implications for health care practice. In any case, increased cooperation between researchers and practitioners is advocated (Kok and Green, 1990).

In the present study, the control group was not exposed to a 'placebo' overview, and therefore it was not possible to make a distinction between the specific and non-specific effects of the overview. The effects may, in part, be explained by the fact that some of the subjects in the control group realised that they were not expected to change their belief, whereas the opposite may have been the case for the subjects in the experimental group.

It can be concluded that the impact of the short overview on GPs and PTs consisted of a change in belief in the expected direction; however, this change was not as great as anticipated. Further research is required into the determinants of the impact on health care practice of empirical evidence about the efficacy of an intervention, in order to maximise changes in belief.

References