CONCISE REPORT

A randomised study of two training programmes for general practitioners in the techniques of shoulder injection

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SUBJECTS AND METHODS

Subjects
GP principals in the Northern Ireland Eastern Health and Social Services Board (n=432) were invited to apply for a training course in joint injection techniques. Power calculations indicated that 40 GPs would be required to show a difference of one standard deviation, with a 90% power in each of the outcome variables. The first 44 applicants were given course places. Inclusion criteria required that participating GPs were principals and willing to receive extended training on patients, in addition to mannequins, if selected.

Baseline assessment
Before the training course, selected GPs recorded their demographic characteristics, duration in practice, and previous experience in performing shoulder injections in a postgraduate training post (for example, rheumatology, orthopaedics, or sports medicine). Participants were asked to review their records and document:

- The number of shoulder injections that they had performed in the six months before the training course
- Their level of confidence (on a 10 cm visual analogue scale) in performing shoulder joint injections.
- The number of patients with shoulder complaints that they had referred to hospital injection clinics or physiotherapy in the six months before the training course.

Training
All participating GPs attended a one day training course held at Musgrave Park Hospital, Belfast. Training on shoulder injection techniques included:

- A lecture on shoulder anatomy and assessment
- Work in small groups on shoulder assessment
- A lecture on shoulder injection techniques
- Work in small groups on shoulder injection techniques, using rubber mannequins.

The work in small groups was supervised by rheumatologists in a ratio of five GPs to one rheumatologist. Before training, all rheumatologists were briefed by the course organisers to standardise the method of training. The shoulder injection techniques taught by each rheumatologist reflected their own clinical practice and focused on anterior, posterior, and lateral shoulder injections. The training was carried out in stages.

First the GP watched their tutor injecting the shoulder mannequin, then discussed details of the injection technique with the tutor, and finally, demonstrated their own injection technique to their tutor.

When all the GPs had been trained on shoulder mannequins, they were then told who would receive further training on patients. Half of the GPs participating in the study were...
randomly selected to receive this additional training, which took place at two hospital injection clinics (Musgrave Park and Belfast City Hospitals). At these sessions (lasting for three hours), GPs received further training and hands on experience in shoulder joint injection techniques on patients who had been referred with shoulder complaints. Training was supervised by rheumatologists, who had met previously to standardise their method of teaching. The approach was similar to that used during the mannequin training day.

Assessment after training
Six months after training, each GP was asked to record:
- The number of shoulder injections performed since training
- Their current level of confidence in performing shoulder injections
- The number of patients with shoulder complaints that they had referred to hospital injection clinics or physiotherapy since training.

Statistical analysis
Fisher's exact test was used to assess the comparability of the demographic characteristics and self reported clinical activity of the two groups before training. An independent samples t test was used to compare the degree of change in self reported clinical activity after training. Spearman's rank correlation was used to evaluate the association between GPs' level of confidence in performing injections and the reported number of injections before training.

Ethical approval
The study was approved by the Queen’s University of Belfast Research ethics committee (application No 85/01). Consent was obtained both from GPs and patients who participated in the additional training sessions of the study.

RESULTS
Forty four GPs were allocated places in the training course, but two cancelled and two did not attend on the day. Thus 40 GPs took part in the study. One GP's assessment return after training was incomplete and another failed to make a return. Both of these GPs were in the “mannequin only” training group.

Table 1 shows the demographic characteristics and baseline clinical activity of the two training groups, which were comparable.

Table 2 compares the degree of change in self reported clinical activity after training in the two groups. GPs who had additional training with patients reported a significantly greater increase in the number of shoulder injections and level of confidence in performing injections than those who were trained on mannequins only. No difference was found in the number of shoulder referrals to either hospital injection clinics or to physiotherapy between the groups.
express an interest in performing injections should be offered the chance to train on patients.7

Values used in this study were self reported and recorded by the participating GPs and not verified independently. Nevertheless, the analysis used in this study was based on the difference in change of reported clinical activity rather than absolute values. Therefore, as all the GPs received mannequin training, and only learnt after this training which of them would train on patients, we would be hopeful that the “halo” effect would be accounted for by examining the difference of change in both groups.

We have not attempted to assess the impact of different training methods on the clinical benefits of shoulder joint injection by GPs in the community. We are aware that intra-articular injection is often inaccurate (even by trained rheumatologists) and that this may have some impact on the recovery of symptoms. However, given the positive findings of this study, such an evaluation of the impact of different training methods on clinical outcomes would be worthy of future research.7,16

Equally, we acknowledge that GPs confidence, as measured in this study, may correlate with perceived levels of self efficacy that may not directly relate to clinical performance.

In conclusion, training on patients in addition to conventional training on model mannequins improves GPs’ shoulder injection activity and level of confidence over a six month period. Hospital injection clinics provide a suitable place in which to train and assess those GPs with special interest in performing joint injections in the community.

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