Teaching rheumatology to nurses

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SUMMARY Seven different types of lecturing technique were assessed in 14 groups of nurses at 2 hospitals. Two lectures in rheumatology were given to each group and a multiple choice questionnaire answered by the nurses immediately after the lecture and 3 months later. A significant amount of knowledge was imparted by the lecturer. About a third of the knowledge, however, was lost within a minute of the end of the lecture, and a half to two-thirds within 3 months. There was no correlation between scores and the row on which the students sat. There was no significant difference between the scores of overseas students and those of British nurses. At immediate recall the techniques differed little. The techniques which scored best were giving the questionnaire before the lectures, giving handouts and using the blackboard. At delayed recall 100% differences in marks were seen between the worst and best techniques in the second lecture. The same techniques which scored best at immediate recall did so on delayed recall. The lowest score occurred where note taking was forbidden. Some questions scored significantly better with note taking. When note taking was forbidden, it made no difference if the student was an habitual notetaker or not. Nor did it make any difference if she was frustrated by the ban. There was no correlation between entry qualifications and the scores obtained. Nurses at a non-teaching hospital did just as well as those at a teaching hospital.

It should be emphasised that teaching endeavours to influence 3 aspects—knowledge, skills and attitudes. This series of experiments largely tests the first, but does suggest that a technique which scores highly on information recall may be less helpful in forming constructive attitudes to the patient.

Among the more pleasurable duties that falls to the lot of the rheumatologist is teaching nurses. This is not only pleasurable but highly desirable (from the point of view of the discipline). It usually takes the form of 2 or more lectures. Little has been done to assess the best way of imparting the rheumatic knowledge nurses need, nor to determine the factors in the retention of their knowledge. In a preliminary study (Wright, 1974) it was shown that there appeared to be nothing to choose between using slides or blackboard in teaching, except that those who preferred the blackboard method remembered more regardless of the means by which they were taught. It was thought that this may have been because these students were the note takers. The present study investigated this possibility together with other variations in lecturing technique. Seven different types of lecture were given. We also looked at factors such as the type of hospital (teaching and non-teaching), ethnic origin of the student, where the student sat in the lecture, and the entry qualifications.

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Material and methods

Two lectures were chosen for the experiments. One covered rheumatoid arthritis the other dealt with osteoarthritis, ankylosing spondylitis, and gout. Except in 1 set of experiments detailed below, slides were used extensively. The lectures were given to 14 sets of students in two hospitals, the General Infirmary at Leeds (teaching) and the Harrogate General Hospital (non-teaching). A multiple choice question paper was given after each lecture to test immediate recall, and the same paper was given when the nurses next came into block (usually 3 or 4 months later) to test delayed recall. The nurses were unaware that they were going to be tested after the lecture except where indicated below, and none knew that the test was to be repeated later. On 1 occasion the test was given before the lecture as well, to see how much knowledge was initially present and to see if this variation of technique affected the recall. Other modifications to the lecturing techniques were use of blackboard (with-

out slides), note taking forbidden, note taking encouraged, handouts covering the points of the lecture, structured handouts which required the student to complete parts during the course of the lecture, and telling the students beforehand that they were to be tested immediately after. The row on which the students sat and their race were noted. With 2 sets of students their 'O' and 'A' level qualifications were correlated with their performance.

Results

OVERALL RESULTS

About a third of knowledge was lost within a minute of finishing the lecture, and at delayed recall a half to two-thirds. Some knowledge was imparted, however, judging by the marks gained in the periods when the test was given before the lecture as well as after (Table 1). For both lectures the differences between the scores before and after the lecture were highly significant ($P < 0.001$).

Usually, where better scores were obtained immediately after the lecture following one method of teaching, a greater loss occurred at delayed recall, suggesting that the improvement was transient.

There was no correlation between the row on which the nurses sat and the scores which they obtained. Overseas students, whether from Africa, the Far East, or the West Indies usually scored a little less well than those from the UK, but the differences were not significant (Table 2).

There was no correlation between the 'O' level results of nurses obtained before entry on the course and their results in these tests.

DIFFERENT HOSPITALS

Interestingly, there was no significant difference between the marks gained by the nurses in the

Table 1 *Mean and standard deviations of percentage scores for 2 lectures given by 7 different teaching methods*

Teaching method	Lecture 1		Lecture 2	
	Immediate recall	Delayed recall	Immediate recall	Delayed recall
Note taking encouraged	65 ± 5.9	42 ± 3.9	58 ± 4.6	27 ± 4.7
Notetaking forbidden	64 ± 5.9	45 ± 4.0	54 ± 5.3	22 ± 5.1
Handouts	74 ± 3.4	47 ± 3.7	64 ± 5.7	43 ± 5.9
Structured handouts	63 ± 5.6	42 ± 4.5	53 ± 4.6	38 ± 2.3
Blackboard	73 ± 3.2	50 ± 4.7	64 ± 4.0	43 ± 3.8
Told beforehand that test followed	71 ± 4.8	44 ± 4.5	59 ± 5.5	29 ± 3.6
Questions given beforehand				
Before	28 ± 5.7		18 ± 3.3	
After	74 ± 4.9	54 ± 4.9	63 ± 4.6	38 ± 4.8

Table 2 *Comparison of scores between overseas and UK students (+ is better mark for overseas nurses) in 2 hospitals*

Hospital	Lecture 1		Lecture 2	
	Immediate recall	Delayed recall	Immediate recall	Delayed recall
Harrogate	+5.4%	-7.0%	-7.4%	-3.0%
Leeds	-5.0%	-10.0%	0	-5.0%

teaching and the non-teaching hospitals (Table 3). This was true even when the preferred method of teaching differed. Thus, the nurses in the teaching hospital preferred slides to the blackboard, whereas the reverse was true in the non-teaching hospital but the marks gained were the same.

Various methods

Table 1 shows the scores for each of the lecture techniques at immediate and delayed recall. The most striking finding is that there is little to choose between any of the methods on immediate recall—the maximum difference in marks being only 11%. There was a greater difference 3 months later, the greatest difference being 21% representing half the best scores. The 3 best methods at immediate recall were giving the questionnaire beforehand, using handouts, and blackboard teaching in both lectures and at delayed recall they still had pride of place. All these methods gave highly significantly better results than teaching when notes were forbidden ($P < 0.001$).

If one regards the lectures with slides in which note taking was allowed as the standard presentation, significantly better scores were observed at immediate recall from those nurses who had the questions before the lecture ($P < 0.05$). Methods which scored better at delayed recall were questions given before the lecture ($P < 0.001$) and handouts given with the lecture ($P < 0.001$).

In the study of the value of note taking, individual questions were analysed at the two hospitals. The only significant differences when note taking was forbidden were that at immediate recall the questions on the value of physiotherapy scored significantly

Table 3 *Mean and standard deviation of marks obtained by nurses in 2 hospitals for 2 lectures at immediate and delayed recall*

	Set 1		Set 2	
	Leeds	Harrogate	Leeds	Harrogate
Immediate	65 ± 5.9	73 ± 3.2	56 ± 4.6	60 ± 5.05
Delayed	44 ± 3.9	42 ± 3.6	25 ± 4.7	30 ± 3.67

better with notes at Harrogate ($P < 0.05$). At Leeds significantly better scores were obtained with notes for the x-ray appearances of rheumatoid joints ($P < 0.05$), the value of bed rest in treating rheumatoid patients ($P < 0.01$), the pathology of osteoarthritis ($P < 0.05$), and the features of chronic gout ($P < 0.02$). At delayed recall, however, the only significant difference was in 1 question at Leeds—that on anti-inflammatory drugs used in the treatment of rheumatoid arthritis ($P < 0.05$).

None of these findings are very striking, and they do not suggest that any particular piece of information is best taught with an emphasis on note taking. Students were asked if they usually took notes. No difference was observed in the scores obtained in the lectures when note taking was forbidden between those who habitually took notes and those who did not—either at immediate or delayed recall. The students were also asked at the end of the lecture if they were frustrated by not being allowed to take notes. Frustration made no difference!

Discussion

In teaching nurses rheumatology about a third of the knowledge tested had been forgotten within a minute of finishing the lecture, and 3 months later a half to two-thirds. The lecturer was aware that this happened to others but was dismayed to find he was no different. However, he took heart from the fact that something was learned. The amount remembered immediately after the lecture and 3 months later was highly significantly different from the ignorance which prevailed before the lectures.

The similarity of the marks despite 7 different techniques could be explained on superb lecturing—this single factor swamping any other differences. However, one of us (R.H.) thinks this unlikely, bearing in mind the considerable loss of information at immediate and delayed recall.

Of the 7 methods tried, at immediate recall there was little difference between the scores. However, in both lectures the techniques which scored best were where the questionnaire was given first, where handouts were given, and where the blackboard was used. Three months later, however, differences were more marked. In the first lecture the difference between best and worst technique was 11%, but in the second lecture it was 21% (ie, the best was nearly double the worst). This difference between the 2 lectures may have been because 3 diseases were discussed in the second, whereas only rheumatoid arthritis was covered in the first. Again, however, those techniques which scored best on immediate recall took pride of place.

The lowest score of any technique occurred when note taking was forbidden. This lends some support to the value of taking notes, although a slide presentation during which note taking was encouraged did not do particularly well compared with other techniques.

Because we had a particular interest in the value of note taking the scores for individual questions were analysed separately. There were significant differences on certain questions, suggesting that some topics are best taught with different techniques. Intuitively this would be anticipated, but set numbers obviously preclude the widespread application of this. There is evidence also that various people respond differently to different techniques.

It should be emphasised that in teaching one hopes to influence 3 aspects—knowledge, attitudes, and skills. All this exercise tests is knowledge. Although the blackboard teaching scored consistently higher than the slide presentation, at the General Infirmary the slides were more appreciated. The nurses felt that they understood the subject better by seeing examples of the clinical state.

Although in medical courses there is evidence that examination results correlate with 'A' level grades (Wright, 1974), no such relationship was detected in this study. It is certainly true that superlative academic achievement before entry into nurse training is no guarantee of a good nurse at the end of the period of study. Many have reservations about the value of degree courses in this context. Unfortunately, we have few ways of measuring non-academic abilities in our students, and these may be of paramount importance in medicine (Wright, 1975). It was of interest that the nurses in a non-teaching hospital did just as well as those in a teaching hospital, despite lower entrance qualifications in the former. Enthusiasm and dedication more than compensate for previous academic attainment in this context.

Interestingly, overseas students (most of whom were from the Far East) did almost as well as British nurses, despite mild language difficulties. Where students sat made no apparent difference to the marks. There was no evidence that the bright sat at the front and the dull and/or slack sat at the back. Where people sit is probably more related to personality traits such as extroversion and introversion.

References

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