



Significant Difference in Knowledge between English and Danish Psychiatrists

Dr Lars Hansen, MD & MRCPsych, John W. McDonald, PhD

Abstract

Purpose

The purpose of the study was to investigate if differences in levels of knowledge existed between Danish and English training and specialist psychiatrists. This is important in the context of the free (and growing) movement of the medical workforce across European Union (EU) countries' borders.

Methods

A complete balanced two-way factorial study design was used. Ten training and ten specialist psychiatrists were recruited in each country from reputable, university hospitals. They answered 50 multiple choice questions (MCQs), translated into the appropriate language, consisting of four subcategories of questions: psychology (15 MCQs), psychopharmacology (10 MCQs), neuroscience (5 MCQs) and psychopathology (20 MCQs). No memory or other types of aides were allowed at the knowledge test.

A two-way analysis of variance was used to analyse the total knowledge score (number of correct answers) and the component subscores. Levene's test of equality of error variances was used to test for variance homogeneity.

Results.

There were significant differences in total knowledge and psychology knowledge by country and level of training. UK physicians scored 3.10 points higher than Danish doctors, with 95% confidence interval (.97, 5.23). The knowledge of the specialists was also significantly superior to that of the training psychiatrists, with 2.30 higher score, 95% confidence interval (.17, 4.43). In the sub-categories only the scores in the psychology section were significantly different. UK physicians scored 2.30 higher than Danish physicians, with 95% confidence interval (1.15, 3.45). Specialists scored 1.20 higher than non-specialists with 95% confidence interval (.05, 2.35).

Conclusions.

The results indicate that there is a significant difference in level of knowledge between psychiatrists in these two EU-countries, England and Denmark. This difference seemed to be chiefly the result of different knowledge of psychology. The disparity could be a result of the fundamentally different post-graduate training system in psychiatry in the two countries. Surprisingly, the differences in total knowledge and psychology knowledge between countries were larger than the differences between levels of training. The difference in knowledge is worrying taking into consideration that there is free movement of the workforce, including doctors, across the EU. The results here need further confirmation in future studies with greater numbers, more countries involved and perhaps additional measurements to MCQs.

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Key Words.

European Union - Multiple choice questions - Post-graduate psychiatric training.

Introduction.

At specialist level it is possible to be recognized across all member states in the European Union (EU) in accordance with the principle of free movement of labour. While this is not the case for training doctors, certain aspects of each country's training are usually recognized within the EU. Because of lack of doctors in several European countries, especially at specialist level, competing between countries in attracting senior doctors has become a regular feature of modern medicine. In spite this free flowing movement of doctors within the EU, little is known about the differences in level of competency of doctors trained in different countries.

The major differences between the individual countries' training programmes in post-graduate psychiatry are however well documented (e.g. 1,2,3). Many countries within the EU do not have a post-graduate exam while others have an exam either during or at the end of the training period. The time spent receiving tutorials, going on courses, doing research, length of working hours and even length of actual training varies greatly between countries.

The UK is unique within the EU by having two competitive exams with passing rates well below 50 % during the basic training (senior house officer level) followed up by regular assessments at higher training level (specialist registrar level) (2). These exams must be passed before proceeding to higher

training. This encourages the trainee to study intensely during the training period. Teaching is prioritized and structured so that the junior doctor attends a whole day of teaching weekly in conjunction with a compulsory, personal tutorial of 1 hour weekly with the responsible consultant. The UK is furthermore unique by having the longest working hours for doctors in the EU.

Denmark differs by having no exams and only relatively recently having introduced a tutor system – not necessarily consultant led - working with much less frequent intervals than the British. Denmark also has a 37 hours working week, including on-calls, for doctors. The training in Denmark does however, unlike the British system, include one year of working as a senior house officer in neurology.

It therefore seems relevant to compare the level of psychiatrists' knowledge in two EU-countries with two so fundamentally different approaches to post-graduate training in psychiatry. The aim of this article is to compare the differences in knowledge between specialists and training psychiatrists and differences between countries. Finally, the questionnaire administered allowed for breaking down the knowledge into four categories; psychopathology, psychology, psychopharmacology and neurosciences. Individual differences between these areas of knowledge were also investigated.

Methodology and Statistics.

A questionnaire containing 50 multiple choice questions (MCQS) questions were administered to 20 British psychiatrists, 10 specialists and 10 trainees, working in a university hospital in England (Southampton, Department of Psychiatry). 30 minutes were allowed to complete the questionnaire.

The questionnaire was then translated into Danish (and back into English by an independent person to verify the translation) and administered to 20 Danish psychiatrists, 10 specialists and 10 trainees, working in a university hospital in Denmark (Copenhagen, Rigshospitalet). Also here 30 minutes were allowed to complete the questionnaire.

The subscales were composed of a variable number of questions (items). The composite score is the simple sum of correct answers. The possible scores ranged from 0 to 10 for psychopharmacology, from 0 to 15 for psychology, from 0 to 20 for psychopathology and from 0 to 5 for neuroscience. The possible total knowledge score ranged from 0 to 50. The minimum, maximum, mean, median and standard deviation for each of the subscales and total knowledge scores is given in Table 1.

(Questionnaire can be requested from the first author.)

A complete balanced two-way factorial study design was used. There were 10 observations for each possible combination of the levels of the factors Country (United Kingdom versus Denmark) and Level of Training (specialist versus non-specialist). A two-way analysis of variance (ANOVA) assuming a normally distributed error term was used to analyse the total knowledge score and the component subscores. The Univariate General Linear Model procedure in SPSS Version 11.5 was used to carry out the analysis of variance. Levene's test of equality of error variances was used to test for variance homogeneity for each of the models fitted. In all analyses, the test of variance homogeneity was not rejected at the .01 level.

The analysis strategy was first to fit the model with main effects for Country and Level of Training and a Country by Level of Training interaction term. The test of a Country by Level of Training interaction was not significant at the .01 level for all the models. Therefore, additive models were fitted.

Results.

There were significant differences in total knowledge and psychology knowledge by country and level of training. Normal Q-Q plots of standardized residuals were used to assess the assumption of normality for these models. These plots gave little evidence of systematic curvature, so we concluded that the assumption of normality was justified.

The main effects of Country ($p=.005$) and Level of Training ($p=.035$) were significant at the .05 level for total knowledge. UK doctors scored 3.10 points higher than Danish doctors, with 95% confidence interval (.97, 5.23). Specialists scored 2.30 higher than non-specialists with 95% confidence interval (.17, 4.43). The main effects of Country ($p=.000$) and Level of Training ($p=.041$) were significant at the .05 level for psychology knowledge. UK physicians scored 2.30 higher than Danish physicians, with 95% confidence interval (1.15, 3.45). Specialists scored 1.20 higher than non-specialists with 95% confidence interval (.05, 2.35).

The main effects of Country and Level of Training were not significant at the .05 level for the neuroscience scores, the psychopathology scores and psychopharmacology scores. The main effects of Country and Level of Training were not significant at the .05 level for the sum of the neuroscience scores, the psychopathology scores and psychopharmacology scores.

Discussion.

Surprisingly, the differences in total knowledge and psychology knowledge between countries were larger than the differences between levels of training. As there were no significant differences in knowledge for the other subscales and the sum of these subscale scores, we mainly attribute the differences in total knowledge to differences in psychology knowledge.

This clearly has implications for the Danish training generally and specifically with regard to the important area of psychology. The focus on psychology in the British post graduate exam syllabus is considerable and appears to result in a significantly better knowledge than what was achieved by Danish psychiatrists.

It is also noteworthy that the Danish participants did not possess a superior knowledge in the neuro-scientific area considering that they spend one year of their training as neurological junior doctors. There was however a non-significant trend towards Danish training psychiatrists to score higher than their English colleagues in this area. This trend disappeared at specialist level. It is possible that the 5 points obtainable in this category were too insignificant to measure any real difference.

No other category showed any significant differences which much also be said to be surprising thinking about the emphasize the English training system puts on specific knowledge in these areas and the English doctors far superior experience in doing MCQ-type questionnaires. (Already from medical student level the English educational system employs MCQs to test students. This continues in the post graduate training.) Until 2001 (now abolished) negative marking was used in the post-graduate, English exams to discourage random guessing on true-false questions. This meant that candidates could be punished if they guessed at questions which answers they were not certain of. In spite of clearly stating that this questionnaire would not be evaluated with negative marking before handing them out to the English doctors less than half had ticked every question. This was presumably a result of old habit. This was not the case with the Danish

questionnaires. The lack of ticking is probably the most important bias in this study as completed questionnaires would have produced more significant results considering there is a 50 % chance of getting a question right even at random guessing.

Other biases are, as mentioned, the Danish doctors' lack of familiarity with MCQs, the division into training and specialist psychiatrists may have been too crude; "training doctor" can mean anything from a doctor who has recently started in the psychiatric specialty to someone who has many years of experience. The same is to a degree also the case with specialists, especially in Denmark where some junior-specialists are still considered trainees (2). The fact that the division was made in both countries goes some way to even out the problem. It is furthermore important to realize that MCQs do not test the actual clinical competence of the doctor, but merely the test-person's active knowledge. MCQs have on the other hand repeatedly been shown to test factual knowledge and the finer detail of a subject quickly and reliably (4).

The specialist doctors in both countries were more knowledgeable than their training colleagues. This is for the English doctors rather surprising as all the trainees would be practicing for their post-graduate exams while the specialists could be anywhere from a few years to 30 years post their membership exam.

On conclusion our study showed that English psychiatrists were significantly more knowledgeable than their Danish counterparts. Divided into sub-categories, only psychological knowledge was significantly different

between the two countries. There is reason believe that other sub-categories could have become significantly different if all the English doctors had completed their questionnaires. It must be kept in mind that English doctors are much more experienced filling in MCQs than the Danish would be. The specialists in both countries were more knowledgeable than their training colleagues.

This study indicates that the English, post-graduate training is superior to the Danish in equipping the doctors with factual knowledge measurable by MCQs. It is possible that the more rigorous and structured training, the longer working hours and the threat of the exams make doctors keener to study. These findings need replication with larger number of participants, more countries involved and perhaps additional measurements of differences, e.g. testing clinical doctor/patient relationship. In a time with increasing focus on level of performance and increasing levels of complains the results here clearly put a question mark at the policy of allowing free movement of highly skilled workers in sensitive areas without prior testing of their competencies.

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	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>Median</i>	<i>St.dev.</i>
Total	2 3	40	30.3 5	30.00	3.78
Neuro.	1	5	3.07	3.00	.971
Pathology.	8	1 7	12.63	13.00	2.01
Pharm.	2	9	6.15	6.00	1.49
Psychology	4	1 3	8.50	8.00	2.18
Nonpsych	1 7	2 9	21.85	22.00	2.60

Table 1.

The minimum, maximum, mean, median and standard deviation for each of the subscales and total knowledge scores is given in Table 1.

	UK		Denmark	
	Specialist	Non-specialist	Specialist	Non-specialist
<i>Psychopharmacology</i>	7,7,6,9,4, 7,2,8,4,8.	7,4,5,6,8, 7,7,6,4,8.	6,7,6,5,7, 6,7,7,8,6.	5,6,4,6,6, 5,4,8,7,6.
<i>Psychology</i>	10,9,13,9,11, 12,10,7,11,9.	13,10,9,8,9, 7,8,13,9,7.	8,9,8,10,5, 6,10,7,9,10.	8,7,6,5,7, 8,6,8,4,6.

<i>Psychopathology</i>	13,14,14,13,15, 12,13,10,13,11.	15,13,13,13,12, 10,14,14,13,17.	15,15,12,14,12, 12,12,12,11,17.	10,15,12,8,9, 11,10,10,13,1
<i>Neuroscience</i>	5,1,3,4,3, 2,3,3,4,3.	5,1,4,2,3, 3,1,2,3,4.	4,3,3,4,3, 3,2,2,3,3.	3,3,4,4,4, 4,3,3,2,4.

Table 2. Scores on individual subscales.

	UK	Denmark
Specialist	35,30,36,32,33, 33,28,28,32,31. <i>M=31.8</i>	33,34,29,33,27, 27,31,28,31,36. <i>M=30.9</i>
Non-specialist	40,28,31,29,32, 27,30,35,29,36. <i>M=31.7</i>	26,31,26,23,26, 28,23,28,26,29. <i>M=26.6</i>

Table 3. Overall performance means.

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