Research paper

An empirical exploration of the impact of dyslexia on placement-based learning, and a comparison with non-dyslexic students

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What is known on this subject
- There is wide variation in the type and extent of the difficulties described by nursing students with dyslexia when on work placements.
- Handovers at the change of a shift, dealing with documentation, drug calculations and administration tasks are the most problematic areas for students with dyslexia.
- Mentors of students on nursing placements lack awareness of what dyslexia is and how it might affect a student when carrying out certain tasks. They also lack knowledge of how to help a student with dyslexia to overcome these difficulties.

What this paper adds
- All of the students reported finding handovers and drug calculations difficult, whether or not they had dyslexia.
- The only tasks that showed statistical differences between dyslexic and non-dyslexic students were reading and writing patient notes and using care plans.
- Research findings have been translated into two open-access web-based resources.

ABSTRACT

There is an emerging body of evidence about how dyslexia affects the performance of healthcare workers and students in practice. At times, concerns have been raised that dyslexia may affect competency and patient safety. There is growing understanding in the health professions about what dyslexia is and what type of support might help dyslexic individuals in their practice. This paper describes a mixed-method study that explored the impact of dyslexia on learning in the practice setting. Semi-structured interviews were conducted with 7 lecturer-practitioners and 9 student nurses who had declared their dyslexia on entry to their course. The findings were used to develop questionnaires about the ease or difficulty of various practice activities. These were completed by 54 students with dyslexia and 52 non-dyslexic students.

The interviews revealed wide variation in the type and extent of the difficulties described by students with dyslexia. Handovers, dealing with documentation and drug calculations and administration were the most problematic areas. Quantitative data suggested that all students, whether or not they had dyslexia, found drug calculations and handovers difficult ($P > 0.05$). Both groups rated placement activities and feelings towards placements very similarly.

Keywords: dyslexia, empirical exploration, placement-based learning

Introduction

This paper reports on a study that aimed to compare the experiences of student nurses with dyslexia with those of non-dyslexic students during placements. A number of reviews have debated the impact of dyslexia on the ability of healthcare workers and students to practise (Murphy, 2008; Sanderson-Mann and McCandless, 2005). Some empirical studies have explored the experiences of dyslexic healthcare workers in practice (Illingworth, 2005; Morris and Turnbull, 2007a), and of dyslexic students (Ridley, 2011; Morris and Turnbull, 2006, 2007b; White, 2007). However, none of them included a comparison group; this study is the first to do so.

Dyslexia

According to the British Dyslexia Association (2011), specific learning difficulties (SpLD), of which dyslexia is the most common, affect the way in which people learn and process information. Dyslexia is often described in terms of deficits, such as problems with space, time and numbers (Miles and Gilroy, 1996), short-term memory (Beech, 1997), difficulty in differentiating between left and right (Miles, 1983), and weak organisational skills (Stacey, 1997, 1998). However, dyslexia is also associated with enhanced skills (Reid and Kirk, 2001), such as being able to think and perceive multi-dimensionally, being intuitive and insightful, and being highly aware of the environment (Davis and Braun, 1997), and having heightened empathy and problem-solving skills (Morris and Turnbull, 2007b). Recently, dyslexia has been seen as a continuum in which individuals have different difficulties and positive attributes that are, in part, associated with the compensatory strategies which they have developed (Cowen, 2010).

Dyslexia was classified as a disability under the Disability Discrimination Act (DDA) (The Stationery Office, 1995). Educational institutions are required by law to make reasonable adjustments in order to accommodate people with disabilities if existing arrangements place them at a substantial disadvantage compared with those without such differences. Disabilities, such as dyslexia, are protected characteristics under the Equality Act 2010 (The Stationery Office, 2010), which replaced previous equality legislation in England, Scotland and Wales. However, case law concerning reasonable adjustment in relation to dyslexia is not yet available (Ridley, 2011).

There are fears that dyslexia may affect competency to practise, especially with regard to tasks such as drug administration (Duffin, 2001; Watkinson, 2002), and evidence about how dyslexia affects the performance of healthcare workers and students in practice is slowly emerging. Carey (2011) explored nurse educators' views about disability and nursing, and their concerns about safe practice. As nurse educators are involved in applying fitness standards as part of the selection of students, such concerns have the potential for discrimination. According to Wright (2000) there does not seem to be any evidence that nurses and midwives with dyslexia cannot cope with studying or qualifying, but there has been a general lack of understanding in the health professions as to what dyslexia is, how individuals develop adaptive mechanisms, and how educational support can help individuals to achieve safe practice. Ridley (2011) has recently confirmed that there is no evidence to substantiate concerns about the competency of students with dyslexia, and it follows that individual students should be assessed on their individual competence. Nevertheless, in a study conducted as part of a formal investigation by the Disability Rights Commission (2007) concerning professional regulation, Stanley *et al* (2011) suggest that disclosure is a risky process for people who want to train as nurses.

Widening entry gates provided students with less traditional educational backgrounds with the opportunity to enter the healthcare professions, and some may only have recognised their dyslexia once they began to study. Universities now have specialist teams to help students with disabilities in the academic environment. However, during clinical placements, students may not experience the same degree of structured support. Tee and Cowen (2011) suggest that the practice environment may not be as amenable to reasonable adjustment as the academic environment. The Nursing and Midwifery Council (2008) promotes partnership working to prepare students and placement areas, and recognises the importance of fostering a supportive environment in which disclosure of specific learning needs will not result in discrimination. Mentors need appropriate preparation about the needs of students with disabilities and the implementation of reasonable adjustments (Tee *et al*, 2010).

Student dyslexia in the healthcare workplace

Some dated reports focusing on anecdotal accounts and academic issues arising for student nurses with dyslexia can be found in professional nursing journals (e.g. Shuler, 1990; Shellenbarger, 1993; Sheehan and Nganasurian, 1994; Cobley and Parry, 1997). Many of these reports are small-scale empirical studies (Illingworth, 2005) or literature reviews (Murphy, 2008; Dale and Aiken, 2007; Sanderson-Mann and McCandless, 2006). A larger study of 18 students with dyslexia used interviews to investigate the clinical

experiences of students with dyslexia (Morris and Turnbull, 2006) and, in a later article, focused specifically on disclosure (Morris and Turnbull, 2007b). White (2007) interviewed nursing students with dyslexia and university staff, and in addition to this surveyed clinical mentors by means of a postal questionnaire. For students, the issues arising from these studies included communication difficulties, order sequencing, time management and arithmetical calculations. Other students described spatial awareness and orientation as problematic. All students develop their own strategies for adapting and coping, and we have previously suggested that students with dyslexia might adapt more easily than non-dyslexic students to become more holistic practitioners (Sanderson-Mann and McCandless, 2006). Other sources suggest that dyslexic students are hyper-vigilant in that they check and re-check calculations and procedures before carrying them out (Morris and Turnbull, 2006; Wright, 2000). Crouch (2008), following an in-depth analysis of interviews with 16 nursing students with dyslexia, found similar issues with forgetfulness as a major factor, and 31% of those interviewed had a stutter, a previously unreported trait. Ridley (2011) explored the experiences of seven nursing students with dyslexia, and found that the students tended to focus on what they perceived to be their limitations as opposed to their abilities; not all students experienced difficulties in placements.

A major problem in interpreting findings from previous studies is that it is unclear to what extent non-dyslexic students experienced similar difficulties, especially when faced with new environments and situations. The study presented in this paper addressed this gap in the literature, after first gathering qualitative data to establish the views of nursing students with dyslexia and those of practitioner-lecturers (nurse practitioners who are seconded from their area of clinical practice to the School of Nursing as lecturers for approximately 2 days a week).

The aim of the study was to compare the experiences of dyslexic and non-dyslexic student nurses during clinical placement. All of the students were enrolled on the Diploma in Nursing, leading to initial registration.

The objectives were as follows:

- to explore the views and experiences of students with dyslexia about working in a practice setting
- to ascertain the views of practitioner-lecturers about the competence, in practice, of students with dyslexia
- to compare the ease or difficulty of carrying out various tasks, while in placement, for students with and without dyslexia
- to use the results to produce guidelines on coping with dyslexia in the practice learning environment,

for healthcare mentors and students (described in another paper in this issue by Wharrad *et al*, 2012).

Method

Ethical review

The University of Nottingham Medical School Ethics Board approved the study.

Design

A mixed-methods approach in three parts was used to gain a richer and deeper understanding (Burnard *et al*, 2011) of the issues experienced by student nurses with dyslexia in clinical placement environments. Semi-structured interview schedules derived from the themes identified in the literature review were used in Parts One and Two. All interviews were recorded.

Part One involved interviewing student nurses who had disclosed dyslexia on admission to the Diploma in Nursing programme about the types of support they would like on clinical placements, and whether they believed that mentors needed information about supervising student nurses with dyslexia. Forms of support and type of information were explored in the interviews. Students were asked about the strategies that they used to manage their dyslexia in clinical environments. They were also asked to give examples of when they had felt disadvantaged during clinical placement, and to identify any areas where they felt that they might be at an advantage. Five students took part in two group interviews. Four students were interviewed individually (three by phone, and one face to face), due to the difficulties of finding a convenient time to get all the students together to attend a single focus group.

In Part Two, practitioner-lecturers were interviewed individually about their actual experiences or perceptions of mentoring student nurses with dyslexia, their understanding of dyslexia, any talents and skills that a student nurse with dyslexia might have, and the impact that they thought dyslexia might have on learning in the clinical environment. They were also asked whether they would like more information on dyslexia, and how they would like to receive this.

Information obtained from the interview stages was used to develop two questionnaires for Part Three, in which placement experiences of students with dyslexia were compared with those of a matched (for characteristics shown in Table 1) comparison group of students who were not known to have dyslexia.

The questionnaires for Part Three were developed by the research team in consultation with an expert group consisting of lecturers and the Academic Sup-

Table 1 Participant characteristics (*n* = 106)

	With dyslexia	Without dyslexia
Total	54	52
Gender (female)	93%	94%
Median age (range) (years)	24 (19–48)	25 (19–53)
Previously worked in healthcare	70%	65%
Median length of training (range) (months)	18 (3–45)	18 (3–51)

port and Survey Team (a central university unit that supports students in developing academic writing and other skills) and other researchers in the School of Nursing. The first four pages of each questionnaire were identical. Respondents were asked to rate activities associated with clinical placement and statements about clinical placement. They were asked to rate how easy or difficult they found 10 clinical tasks, using a 5-point Likert scale (where 1 = 'hard' and 5 = 'easy') and five areas from their last clinical placement on the same scale. The final 17 questions concerned how students dealt with clinical placements in general (e.g. Question 30: '*I have difficulty with the different ways the wards work*', Question 36: '*Other students cope better than me on clinical placement*'). Students were given the following response options for these questions: 'Always', 'Usually', 'Sometimes', 'Occasionally' or 'Never.' Student nurses with dyslexia were also asked whether they disclosed dyslexia on their last placement, and were asked to rate whether their mentor understood dyslexia, whether they received help, and whether allowances were made (this was rated on a 5-point scale where 1 = 'a little' and 5 = 'a lot').

Participants

All students recorded as disclosing dyslexia on admission to the Diploma in Nursing were contacted by letter to invite them to participate in the interviews. Thirteen students responded to the invitation, and nine student nurses participated in Part One. Seven of the participants were female, the median age was 24 years (range 19–44 years), and the median length of time in training was 14 months (range 2–32 months; see Table 1). Eight of the participants were enrolled on the adult branch, and the remaining participant was enrolled on the mental health branch (in the UK, nursing is divided into four specialties or branches, namely adult, child, mental health and learning disability).

All 51 practitioner-lecturers in the School of Nursing were contacted by email and invited to participate in the interviews for Part Two. Seven of these indi-

viduals agreed to be interviewed. Two indicated that they had mentored a student nurse with dyslexia, and another two indicated that they believed they had done so, although the student had not disclosed information about this. Four practitioner-lecturers worked in adult nursing and the other three worked in mental health. The length of time as a mentor ranged from 2 to 10 years, and the number of students mentored ranged from 8 to 100 students.

For Part Three, 71 student nurses who had disclosed dyslexia were sent a postal questionnaire, of whom 54 returned the completed questionnaire. A comparison sample of 71 student nurses who had not disclosed dyslexia also received the questionnaire, and 52 returned the completed questionnaire. The comparison group was matched by year of study, branch and age.

Data analysis

The interviews from both groups were analysed separately. Analysis of the interview data was based on the method of framework analysis, developed by Ritchie and Spencer (1994), which meant that themes were identified before analysis, based on the topic guides. These themes were refined while reading the transcripts, which also led to the identification of further themes.

Questionnaire data were entered into SPSS version 11, and were analysed using the Mann-Whitney test in order to compare the ranked score for each group (Walker and Almond, 2010).

Findings

Part One: Student interviews

Over 50% of the students who were interviewed mentioned reading, writing and spelling difficulties, and fewer spoke of problems with numbers, short-term memory, concentration and remembering instructions. Others had difficulty with coordination

and distinguishing between left and right, being slow, and having difficulty understanding explanations and putting thoughts into words. Framework analysis (Ritchie and Spencer, 1994) of the interview data elicited the following themes.

Handovers

Nearly all of the students with dyslexia who were interviewed found handovers easier than others, stating that any difficulties they experienced were no different to those encountered by other students and nurses; others found having to learn the names of conditions and write quickly more problematic. Taped handovers were not felt to be useful, mainly due to the sound quality and speed of delivery. C, a third-year student, said that he would like 10 or 15 minutes longer to write up the handover, and tried to concentrate on only taking notes about the patients he was looking after:

> Still trying to figure out how best to do it when you have handovers, on the wards, I still only got around half things told, because of the amount of information you get told, you have to write the name, or sometimes you don't have to write the name, but it's like 'Did I hear that one with that one or not?' I usually sit next to a nurse and partly copy what they've put.
>
> (C, third-year student)

Documentation

Most of the students with dyslexia had difficulty with tasks that involved writing, such as handwriting, spelling and being able to express thoughts. This included competency documents, patients' notes, carrying out admissions and reading other people's handwriting. Writing notes and learning to write in a professional style became easier with practice:

> I find it hard writing it down, I know exactly what to say, I could have a conversation with you and tell you what it means, but to write it down.
>
> (S, second-year student)

> I have difficulty with certain, quite a few of the words, but I try to avoid it and put something else instead, it means the same thing but it's probably not quite as accurate.
>
> (J, first-year student)

Observations

Two students with dyslexia said that they had no problems with observations (which involve marking points on charts and graphs), whereas others had difficulty in marking the right point on graphs and said they were slower than other students. Students S and P spoke about the difficulty of marking a point on a graph:

> The only thing is, when I'm trying to get that line, and the line's jumping, and you take your eyes off it for a second because someone's asking you a question, and you have to go across again, because if you put your pen there, it doesn't look like it lines up.
>
> (S, second-year student)

> Especially if you've got a bad photocopy. It's A4, with little numbers down the side and on the bottom, so you're going up and trying to tally it and you're saying no, this isn't right, and it's got all these other dots across the page from the obs that have been taken through the week, and so you're trying to score it in where they've written in others, and it's just difficult.
>
> (P, second-year student)

Drug calculations and drug administration

Students with dyslexia felt that they were slower than other students at performing drug calculations, and they often checked their calculations many times. Administration of drugs could be difficult if the prescription was handwritten, if there were drugs with similar names, or if a drug was stored under a different name:

> Yes, and you can't pronounce them and you can't read the doctor's writing, you're trying to do your drug round and you haven't got a chance because you can't pronounce them, you can't read them.
>
> (S, second-year student)

> And you've got to read that and give the right dose and then give it to the right patient.
>
> (P, second-year student)

Support required

Students with dyslexia stated that they would like mentors to have a better understanding of dyslexia, and to treat them as individuals, because not everyone with dyslexia is the same. Mentors should be made aware that students may not disclose dyslexia. Some did not want too much support, as it would not be available once they were qualified, and others did not want any visible support because they wanted to avoid feeling different.

Academic support

Not all students had been able to make contact with the Academic Support Team; they preferred to manage on their own or ask friends and relatives to proofread their work. Although both P and S were based at a local hospital, they stated that it was hard to find the time to go to Academic Support or to see the peripatetic academic support tutor.

Adaptive strategies

Students with dyslexia used a variety of strategies to cope with their difficulties (see Box 1).

Disclosure

Students who were open about dyslexia felt that disclosing it would help their learning. Some students told others they were dyslexic only if this was appropriate or necessary, or if they thought that being dyslexic was going to be a problem. Experiences during clinical placement could affect disclosure. For example, L used to be open about her dyslexia, but during the following placement she did not disclose to her mentor for 3 weeks because the initial experience was negative; she was planning to do the same for her next clinical placement.

Attitudes and feelings

Students indicated that they felt isolated and different. They performed worse under pressure, especially if they were being watched. Some were comfortable with the idea of having dyslexia, whereas for others there was an element of denial about both having dyslexia and the fact that they needed help. They tried to manage on their own, and did not like asking people for help.

Part Two: Practitioner-lecturer interviews

Understanding of dyslexia

Only two staff had knowingly mentored a student with dyslexia. Given the prevalence of dyslexia in the population (3–10%; Snowling, 2000), they may have mentored dyslexic students and not realised this. There was some understanding of the issues of stigma about dyslexia and disability legislation, but knowledge about living with dyslexia was limited; some had become more aware of dyslexia through their role, while others had or had now looked for information.

Some practitioner-lecturers discussed whether it would be possible to tell whether a student had undisclosed dyslexia. M (adult branch) felt that she would be able to tell if a student was dyslexic if it was 'quite bad', but two other practitioner-lecturers thought that it would depend on the quality of the working relationship.

Mentoring dyslexic students

B and M, both from the adult branch, had mentored a student with dyslexia. M said that her student's dyslexia was obvious when she read the student's competency documents, but that she had no problems with her student's fitness to practise; the student passed the placement. B said that her student had problems with being able to write down what she wanted to say in the right order so that it made sense, but that her direct care of patients was fine. The student's placement was extended, as it was felt that she was not going to pass. B said that she had no doubts about the student's competency at the end of the placement; the student passed, and eventually became a sister. Mentoring this student involved a lot of commitment, extra time and support, and extra tuition. Despite this, B enjoyed it, because she could see a result.

G, from the adult branch, may have mentored a student with dyslexia who was good with patients, could express herself well verbally and was good at practical tasks. However, she had problems reading the drug chart, identifying the medication from the drug trolley and writing documentation:

> the structure, the style of the writing, I thought 'Oh, there's something wrong there, it's not', she was writing things down and I genuinely couldn't understand what she meant, I don't know if that makes any sense, I couldn't, I mean when she talked about it, yeah, that's fine, straightaway, no problem, but it seems when she tried to get it down on paper it didn't come out right, for some strange reason, it just didn't, it didn't come out right at all.

Box 1 Coping strategies used by students with dyslexia in work placements

- Asking others for help
- Taking time
- Picking out key words when reading
- Writing down tasks and instructions and ticking them off when completed
- For drug calculations, using scrap paper to work them out and/or using a calculator
- For handovers, copying someone else's notes, using abbreviations, using pre-printed handovers or keeping the sheets from the day before, and making a list of patient names before the handover
- For writing, making a list of words that are difficult to spell, looking for a word that is already on the page, asking others to check what they have written, and using a dictionary
- Disguising dyslexia to avoid stigma
- Being open about dyslexia and asking for help

The student seemed to improve over the 6-week placement, and recognised the drugs more easily, but she still had a problem reading prescriptions and locating drugs in the trolley. She failed the placement.

Fitness to practise

Some practitioner-lecturers raised the issue of ensuring that students are competent to practise, and the issue of patient safety. In E's opinion there is tension around this issue because the students are provided with a lot of help that is not available once they are qualified. However, V noted that some students without learning problems were unsafe because they were overconfident, and G referred to 'a failure to fail' culture, noting that for some mentors it is easier not to fail students.

Disclosure

Most practitioner-lecturers felt that it would be desirable for mentors to know whether a student had dyslexia, so that they would to be able to help them in their learning. Opinions varied about whether students should disclose, partly depending on the branch in which the practitioner-lecturers worked, whether they had experience of mentoring students with dyslexia, and whether these experiences had been good or bad. Those working in mental health did not think that disclosure was crucial, and they did not feel that dyslexia would have an impact on tasks in their branch. However, none of them had knowingly mentored a student with dyslexia. E, in mental health, spoke about disclosure in terms of a relationship of trust between mentor and mentee. She felt that she would like to feel that students were comfortable raising the issue, rather than forcing them to disclose.

M and B had both knowingly mentored a student with dyslexia. M felt that it was the student's decision whether to disclose or not, and that students should disclose if they regarded their dyslexia as a major problem or if they felt that their mentor would be able to help them. She suggested that it was easier for people to disclose their dyslexia if they were well established in the working area, rather than being new to the placement. This could apply to students, as, for them, placements are new areas with new people. B felt that students should disclose, to enable them to receive more support, but she realised that other people might judge the student if they knew about their dyslexia. V has not mentored a dyslexic student, but thought that knowing whether a student was dyslexic would mean that they could be placed with a mentor who could be more flexible in their teaching, and who was keen to use different teaching methods.

G mentored a student who may have had dyslexia. She felt that students should disclose dyslexia because the mentor would be responsible for any problems that arose. She could not understand how anyone who wanted to be a nurse would not do so.

Part Three: Student survey

Use of academic support

A total of 39 students with dyslexia had accessed the university study support team, and 20 had seen the peripatetic support tutor; for students without dyslexia these figures were 9 and 6, respectively.

Clinical placement tasks

For students without dyslexia, the task that was rated as hardest was *drug calculations*; the level of difficulty was similar to that for *writing and reading patient notes* and *using care plans* reported by students with dyslexia. For all students, *observations* followed by *following a set of instructions* were rated the easiest tasks (see Table 2). Students with dyslexia had significantly lower ratings than non-dyslexic students on *using patient notes* ($P < 0.001$), using care plans ($P < 0.001$) and following a set of instructions ($P < 0.01$) (see Figure 1). After Bonferroni correction, the critical P value became < 0.002, so the difference between the two groups for following a set of instructions was no longer statistically significant.

Feelings about clinical placements

Students with dyslexia were nearer to the '*always*' pole of the scale (see Table 3) than non-dyslexic students in having difficulty with the different ways in which wards work ($P < 0.05$), worrying about making mistakes ($P < 0.05$), feeling at a disadvantage ($P < 0.05$) and feeling that other students were coping ($P < 0.05$). Responses to the statement '*If I don't understand something I ask*' among students with dyslexia were significantly nearer to the '*never*' pole of the scale ($P < 0.01$); similar statements such as '*I ask staff on the ward for help*' showed no differences.

Assessment for dyslexia-type characteristics and disclosure

Students with dyslexia were asked about disclosure to their mentor and other members of staff during their last placement. They were more likely to disclose to their mentors ($n = 37$) than to other members of staff ($n = 27$). Roughly half of them disclosed at the beginning of their placement. However, 27 never disclosed to other members of staff on their last placement, and 16 never disclosed to their mentor.

Decisions about disclosure varied from one placement to another. Feeling comfortable about disclosing, issues of discrimination and stigma influenced individuals' decisions. Of the 22 students who did disclose, factors influencing decisions included feelings that staff were losing patience with them, the possibility

Table 2 Ratings of various placement activities by students with and without dyslexia

	With dyslexia			Without dyslexia			
	n	Mean	SD	*n*	Mean	SD	Mann–Whitney test
Handovers	54	3.07	0.99	52	3.12	1.06	*P* > 0.05
Using patient notes (writing and reading)	54	2.80	0.88	52	3.40	1.05	P < **0.001***
Using care plans	54	2.91	0.98	52	3.62	0.97	P < **0.001***
Using care pathways	48	3.17	0.91	50	3.40	1.05	*P* > 0.05
Patient admissions	54	2.81	1.20	50	3.26	1.12	*P* > 0.05
Observations (e.g. blood pressure, temperature, pulse, etc.)	54	4.22	0.88	52	4.46	0.90	*P* > 0.05
Drug calculations	53	2.87	1.32	50	2.96	1.05	*P* > 0.05
Administering medication	48	3.54	0.97	49	3.63	0.95	*P* > 0.05
Following a set of instructions	54	3.93	0.87	51	4.43	0.73	P < **0.01**
Time management	54	3.44	1.16	52	3.73	0.99	*P* > 0.05
Finding one's way around/ awareness of one's surroundings	54	3.78	1.11	52	3.98	1.06	*P* > 0.05

Students rated the tasks on a 5-point ordinal scale where 1 was 'hard' and 5 was 'easy.' Values shown are mean scores (with standard deviation) for the dyslexic and non-dyslexic groups. Groups were compared using the Mann–Whitney test, and statistically significant differences are shown in bold in the table.
* Statistical significance is retained after applying a Bonferroni correction to account for multiple testing; the significance level is adjusted to $P < 0.002$.
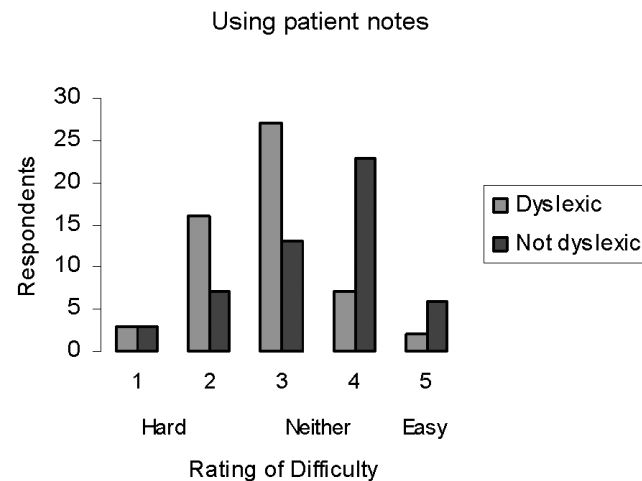
Figure 1 Ratings of difficulty in using patient notes and care plans during clinical placements for nursing students with and without dyslexia ($P < 0.001$).

Table 3 Ratings of feelings about placements among students with and without dyslexia

	Mean for all students	SD	Mean for students with dyslexia	Mean for students without dyslexia	Mann–Whitney test
'I ask staff on the ward for help'	1.83	0.79	1.81	1.85	$P > 0.05$
'I worry about how I am going to cope when I am qualified'	2.66	1.18	2.49	2.83	$P > 0.05$
'I manage on my own rather than ask for help'	4.01	0.84	3.94	4.08	$P > 0.05$
'When carrying out a task I take more time to make sure I do it right'	1.90	0.90	1.85	1.96	$P > 0.05$
'I ask my mentor for help'	1.94	0.86	1.93	1.96	$P > 0.05$
'I cope with whatever is asked of me on clinical placement'	2.04	0.77	1.94	2.14	$P > 0.05$
'I have difficulty with the different ways the wards work'	3.60	0.90	3.36	3.86	P < **0.05**
'I ask the other students on the ward for help'	2.90	0.96	2.81	2.98	$P > 0.05$
'I worry about making mistakes on clinical placement'	2.66	1.10	2.41	2.92	P < **0.05**
'I feel confident on clinical placement'	2.54	0.86	2.66	2.42	$P > 0.05$
'If I don't understand something I ask someone'	1.26	0.59	1.43	1.10	P < **0.01**
'I feel at a disadvantage on clinical placement'	3.88	0.92	3.70	4.08	P < **0.05**
'Other students cope better than me on clinical placement'	3.53	0.99	3.29	3.78	P < **0.05**
'I try to get as much help as I can'	1.92	0.89	1.84	2.00	$P > 0.05$
'I get as much out of my placements as I would like'	1.90	0.7	2.00	1.79	$P > 0.05$
'I would like longer placements to make sure I have got it all'	3.08	1.16	3.00	3.15	$P > 0.05$
'I find clinical placements stressful'	3.48	0.94	3.30	3.67	$P > 0.05$

Students rated the tasks on a 5-point ordinal scale where 1 was 'always' and 5 was 'never.' Values shown are mean scores (with standard deviation) for the dyslexic and non-dyslexic groups. Groups were compared using the Mann–Whitney test, and statistically significant differences are shown in bold in the table.
Applying a Bonferroni correction to account for multiple testing, the significance level is adjusted to $P < 0.002$; after this adjustment there are no significant differences.

of making mistakes, and allowing people to understand why writing took longer for them than for others. Others mentioned that if they disclosed, mentors stopped giving them tasks, which meant that they did not learn anything. One student felt that they were treated differently following disclosure; 8 students did not feel the need to disclose, stating that it was not an issue, relevant or necessary.

Discussion

This is the first study to compare directly the self-ratings of student nurses with and without dyslexia in relation to placements. Although there was variation in the type and extent of difficulties experienced by students with dyslexia, the most problematic areas of practice were handovers, documentation, drug calculations and drug administration (Illingworth, 2005; Morris and Turnbull, 2006; White, 2007). The quantitative data suggest that students, irrespective of whether they have dyslexia, find drug calculations and handovers of similar ease/difficulty, but differ in the ease of use of care plans and patient notes.

Taking observations was considered to be one of the easiest tasks for both groups, but in the interviews some students with dyslexia noted that reading and writing on observation charts was a problem. Perhaps the most important finding was the lack of difference, in many placement learning tasks, between the two groups of students (see Table 2).

Our results suggest that students with dyslexia want mentors to understand dyslexia better and to realise how variable it can be. Adaptive strategies and disclosure behaviour tended to depend on the relationships built up with the mentor and other colleagues. Trust and the need to have confidence in mentors were of paramount importance for a positive experience. Students with dyslexia may be less likely than other students to ask for help if they do not understand something, possibly because they feel they should be able to manage on their own, or because they are afraid of being ridiculed. Surprisingly, given the prevalence of dyslexia in the population, only two practitioner-lecturers had knowingly mentored a dyslexic student. However, it is likely that many mentors will have mentored a student with dyslexia but may not have been aware of this, which suggests that most of the time such students are indistinguishable from others.

For practitioner-lecturers, there is tension between the need to comply with disability legislation and the need to ensure patient safety. Improved understanding of dyslexia could create a more accepting atmosphere, which in turn could encourage more individuals to disclose their dyslexia within the practice setting. Since we carried out this study, the Royal College of Nursing (Cowen, 2010) and the Nursing and Midwifery Council (2008) have enhanced their guidelines on supporting students with dyslexia in practice.

Suggested support for students and mentors

Placements are diverse, which makes it difficult to recommend general 'reasonable adjustments'; sugges-tions have included greater use of computers on the wards. Mentors need support in recognising students' difficulties and providing appropriate help. Mentoring a student with dyslexia requires time and commitment, but mentors can feel under pressure, especially in view of the number of students they are expected to mentor. Mentors lacked the time to find out about dyslexia, and needed resources that were available in the wards and supplemented during mentor update days. We therefore developed two web-based multimedia resources (known as reusable learning objects or RLOs) to disseminate best practice guidelines. The RLOs have been designed to enhance learning and are described in a separate article in this issue (Wharrad et al, 2012) The RLOs are freely available and can be accessed at www.nottingham.ac.uk/nursing/sonet/rlos.

Limitations

Owing to limited time and resources, non-dyslexic students were not screened for dyslexia, which increases the risk of a type 1 error. The study relied on students' self-reporting of their ability to perform various tasks.

Conclusion

This study confirmed previous reports of the difficulties experienced during placement by students with dyslexia, and that mentors and other staff require a better understanding of dyslexia. Comparison of students with and without dyslexia showed that in most instances there were no differences between them, with the exception of reading and writing patient notes and care plans. Students with dyslexia may need to spend more time on these tasks, but there was no evidence that this may affect overall competence or patient safety.

REFERENCES

Beech J (1997) Assessment of memory and reading. In: Beech J and Singleton C (eds) *The Psychological Assessment of Reading*. London: Routledge.

British Dyslexia Association (2011) www.bdadyslexia.org.uk (accessed 21 November 2011).

Burnard P, Morrison P and Gluyas H (2011) *Nursing Research in Action: exploring, understanding and developing skills*. Basingstoke: Palgrave Macmillan.

Carey P (2011) Exploring variation in nurse educators' perceptions of the inclusive curriculum. *International Journal of Inclusive Education* 1–15 DOI 10.1080/13603116.2010.516773.

Cobley R and Parry R (1997) Spell check. *Nursing Times* 93(16):38–40.

Cowen M (2010) *Dyslexia, Dyspraxia and Dyscalculia: a toolkit for nursing staff*. London: Royal College of Nursing.

Crouch A (2008) *Needs/Experiences of Dyslexic Students and Support in Clinical Practice*. www.health.heacademy.ac.uk/publications/miniproject/summaries/acrouchexecsum (accessed 3 February 2012).

Dale C and Aiken FA (2007) *A Review of the Literature into Dyslexia in Nursing Practice. Final Report*. London: Royal College of Nursing Practice Education Forum.

Davis R and Braun E (1997) *The Gift of Dyslexia*. London: Souvenir Press.

Disability Rights Commission (2007) *Maintaining Standards: promoting equality*. www.equalityhumanrights.com/uploaded_files/Education/maintaining_standards_summary_report.pdf (accessed 21 November 2011).

Duffin C (2001) Staff with dyslexia need more support at work. *Nursing Standard* 16:6.

Illingworth K (2005) The effects of dyslexia on the work of healthcare workers and assistants. *Nursing Standard* 19(38):41–8.

Miles T (1983) *Dyslexia: the pattern of difficulties*. London: Granada.

Miles T and Gilroy D (1996) *Dyslexia at College*. London: Methuen.

Morris DK and Turnbull PA (2006) Clinical experiences of students with dyslexia. *Journal of Advanced Nursing* 54(2):238–47.

Morris D and Turnbull P (2007a) A survey-based exploration of the impact of dyslexia on career progression of UK registered nurses. *Journal of Nursing Management* 15:97–106.

Morris DK and Turnbull PA (2007b) The disclosure of dyslexia in clinical practice: experiences of student nurses in the UK. *Nurse Education Today* 27:35–42.

Murphy F (2008) The clinical experiences of dyslexic healthcare students. *Radiography* 15:341–4.

Nursing and Midwifery Council (2008) *Standards to Support Learning and Assessment in Practice*. London: Nursing and Midwifery Council.

Reid G and Kirk J (2001) *Dyslexia in Adults: education and employment*. Chichester: John Wiley & Sons.

Ridley C (2011) The experiences of nursing students with dyslexia. *Nursing Standard* 25(24):35–42.

Ritchie J and Spencer L (1994) Qualitative data analysis for applied policy research. In: Bryman A and Burgess RG (eds) *Analysing Qualitative Data*. London: Routledge.

Sanderson-Mann J and McCandless F (2005) Guidelines to the United Kingdom Disability Discrimination Act (DDA) 1995 and the Special Educational Needs and Disability Act (SENDA) 2001 with regard to nurse education and dyslexia. *Nurse Education Today* 25:542–9.

Sanderson-Mann J and McCandless F (2006) Understanding dyslexia and nurse education in the clinical setting. *Nurse Education in Practice* 6:127–33.

Sheehan M and Nganasurian W (1994) Spelling it out. *Nursing Standard* 8(35):42–5.

Shellenbarger T (1993) Helping the dyslexic nursing student. *Nurse Educator* 8(6):10–13.

Shuler SN (1990) Nursing students with learning disabilities: guidelines for fostering success. *Nursing Forum* 25(2):15–18.

Snowling M (2000) *Dyslexia*. Blackwell: Oxford.

Stacey G (1997) A dyslexic mind a-thinking. *Dyslexia* 3:111–19.

Stacey G (1998) *Equal Opportunities and Staff Concerns. Dyslexia in higher education: learning along the continuum*. Plymouth: University of Plymouth.

Stanley N, Ridley J, Harris J *et al* (2011) Disclosing disability in the context of professional regulation: a qualitative UK study. *Disability and Society* 26(1):19–32.

Tee S and Cowen M (2011) Supporting students with disabilities – promoting understanding amongst mentors in practice. *Nurse Education in Practice* DOI: 10.1016/j.nepr.2011.03.020

Tee S, Owens K, Plowright S *et al* (2010) Being reasonable: supporting disabled nursing students in practice. *Nurse Education in Practice* 10:216–21.

The Stationery Office (1995) *Disability Discrimination Act 1995*. London: The Stationery Office.

The Stationery Office (2010) *Equality Act 2010*. London: The Stationery Office.

Walker J and Almond P (2010) *Interpreting Statistical Findings*. Maidenhead: Open University Press.

Watkinson S (2002) Dyslexia is a cause for concern in nursing. *Nursing Standard* 16(32):30.

Wharrad HJ, Sanderson-Mann J, McCandless F *et al* (2012) Using reusable learning objects to raise awareness and disseminate research findings about the impact of dyslexia on placement-based learning. *Diversity and Equality in Health and Social Care* 9:141–9.

White J (2007) Supporting nursing students with dyslexia in clinical practice. *Nursing Standard* 21:35–42.

Wright D (2000) Educational support for nursing and midwifery students with dyslexia. *Nursing Standard* 14(41):35–41.

CONFLICTS OF INTEREST

None.

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