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The Anxieties of Male and Female Medical Students on Commencing Clinical Studies: The Role of Gender

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ABSTRACT **Context:** *Many medical students experience considerable anxiety when starting hospital experiences.*
Objectives: *To investigate the role of gender in this transitional experience.*
Method: *A questionnaire study was conducted in 1992 and 1995 to compare female and male anxieties about clinical situations they anticipated encountering. The 31-item questionnaire listed potential anxiety-provoking situations and requested the respondents' ratings of their reactions (from 1=not anxious to 4=very anxious).*
Results: *Differences in rankings between males and females were consistent between 1992 and 1995. More detailed analysis of 1995 data showed females had significantly higher totals; for 16/31 situations the difference was statistically significantly higher. For 4/31 situations male score was statistically significantly higher. Males ranked clinical situations involving intimate contact with patients significantly higher. Females scored situations involving interactions with consultants significantly higher than other situations and higher than did males. Females compared to males ranked 6/31 situations over five places different.*
Conclusions: *Customisation of clinical introductory courses should be introduced. Earlier community-based clinical experience may help reduce non-productive anxiety.*

KEYWORDS *Clinical, student, anxiety, gender.*

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Context

A medical career can be particularly stressful due to the combination of involvement with life and death and the high expectations of medicine and of doctors held by both the public and doctors themselves. Partly as a result of these pressures and the need to acquire a substantial body of knowledge and skills, medical students experience considerable anxiety at various stages in the curriculum (Arndt *et al*., 1986; Firth, 1986; Firth-Cozens, 1987; Kidson & Hornblow, 1982; Moss & McManus, 1992; Tooth *et al*., 1989). Such anxieties may result in, for example, reduced examination performance (Tooth *et al*., 1989), increased alcohol consumption (Firth, 1986) and attempted suicide (Warren & Wakeford, 1990). However, the stresses experienced by men and women during training may be very different, at least partly because of different experience of medical training (Allen, 1988, 1994; Lloyd & Gartrell, 1981, 1983; Roos *et al*., 1977). For example, women reported being ''put off'' a particular career path more commonly than men, usually because of difficulties in personal interactions with senior (generally male) staff rather than intrinsic aspects of the speciality itself (Allen, 1988, 1994; Field & Lennox, 1996). Similarly, Firth (1986) reported differences in levels of stress among fourth-year students, with women being more likely than men to report events as stressful (with a stressful event being defined as ''one which has aroused ... feelings in ... [a] negative way)''. In the UK, medical students have traditionally followed a five-year course of study. Two ''pre-clinical'' years mostly in lecture theatre and laboratory-based work have been followed by largely hospital-based clinical experiences. Moss and McManus (1992) have described the transition into clinical medicine that medical students undergo at the beginning of year three as a ''rite of passage''. Although many schools are now introducing early clinical contact as recommended by the General Medical Council (1993), this is relatively slight in most schools. Nevertheless, it will remain the case for the foreseeable future that the transition from the early years of the course to the more clinically orientated hospital-based course will represent a significant and potentially stressful change in students' experience. Moss and McManus (1992) have previously investigated anxiety in medical students beginning their clinical experience. Their study did not investigate the effect of gender on students' anxiety levels. As pointed out above, gender is likely to be an important factor in students' anxiety. We here report our investigation of gender differences in student anxiety in two cohorts of students.

Objectives

In this study we investigated the effect of gender on anxiety among two cohorts of Birmingham students, those entering the third year in 1992 and those doing so in 1995.

Method

In 1992, on the first day of their clinical experience, 155 third-year medical students completed a questionnaire which listed 40 clinical situations they would encounter and they were asked to rate how anxious they were about each of them (Moss & McManus, 1992). The following statement introduced the questionnaire:

> Being a clinical student will involve you doing many things which you have not done as a pre-clinical student. Some of these new activities you will be looking forward to; others, however, you may be approaching with some anxiety or trepidation. We would like to get some idea of how you feel about a range of clinical activities that you will be taking part in during the next few years, and to know how anxious you feel about undertaking them.

A total of 155 students completed the questionnaire (94.5% of students entering the third year).

In 1995 a shortened and slightly modified version (31 questions, one of which was new) of the questionnaire was completed by students beginning their clinical experience. It was completed by 156 students (88 females, 68 males), a response rate of 98%. Modifications to the questionnaire were carried out because it was also being applied simultaneously to first-year students entering a community-based clinical attachment at Birmingham. Ten questions were removed as they related only to the hospital context. One question was added ('Undressing patients of the same sex') since this appeared from informal feedback from students to be a potential area of concern. Five questions were substantially modified to enable students in either context to respond.

In both 1992 and 1995 students rated the clinical situations they would encounter on a four-point scale (1=not anxious, 2=slightly anxious, 3=fairly anxious, 4=very anxious). Mean scores for each question were computed and questions were then ranked according to their scores. Both groups of students ranked the 40 clinical situations in a broadly similar way. In addition, ranking of situations by gender was compared both for 1992 and 1995 Birmingham students to monitor consistency over time. For the 1995 cohort, gender differences were compared by performing a two-sample *t*-test, by cluster analysis and by ranking of individual students' total scores.

Results

Ranking of Anxiety-provoking Situations among Female and Male Students at Birmingham in 1992 and 1995

Table 1 shows the ranking of each clinical situation by gender for Birmingham students in 1992 and Table 2 in 1995. The Spearman rank

Table 1. Comparison of anxiety rankings of male and female students from the 1992 data collection at Birmingham, at the beginning of their clinical training, in rank order according to female scores

Question no.		Female rank	Male rank
1	Presenting cases on ward rounds	1	5
2	Getting diagnoses wrong	2	1
3	Helping with a cardiac arrest	3	6
4	Inadvertently hurting patients	4	3
5	Telling consultants that you do not know something	5	4
6	Dealing with drunk/abusive patients	6	15
7	Making diagnoses	7	9
8	Carrying out rectal examinations	8	7
9	Carrying out vaginal examinations	9	2
10	Suturing patients in casualty	10	13
11	Taking blood from patients	11	18
12	Giving injections	12	17
13	Dealing with psychiatric patients	13	12
14	Delivering babies	14	11
15	Being asked difficult questions by patients	15	14
16	Getting infected by patients	16	8
17	Talking with dying patients	17	10
18	Examining patients	18	16
19	Talking to seriously ill patients	19	21
20	Talking histories in out-patients	20	28
21	Being left alone with a sick patient	21	26
22	Telling patients that you do not know something	22	24
23	Explaining to a patient that a diagnosis is not known	23	20
24	Dealing with sick children	24	22
25	Being up all night	25	25
26	Going to operating theatre	26	30
27	Finding your way around hospital	27	33
28	Undressing patients of the opposite sex	28	19
29	Undressing elderly patients	29	27
30	Going to post mortems	30	32
31	Talking to relatives of patients	31	31
32	Getting up early for ward rounds	32	23
33	Interacting with nursing staff	33	35
34	Filling in blood request form	34	29
35	Carrying a bleep	35	37
36	Taking blood pressures	36	34
37	Dealing with elderly patients	37	36
38	Talking with patients	38	38
39	Sitting watching in out-patients	39	40
40	Taking a pulse	40	39

correlation co-efficient between the male and female rankings in 1992 is 0.93 and in 1995 is 0.86. Among the 1995 cohort, of the first five clinical

situations in the female rankings, three are also in the males' top five and are ranked the same.

Comparing rankings for females between 1992 and 1995 show that four of the situations which appeared in the first five in 1992 also appear in the first five in 1995. Performing the same comparison for males between 1992 and 1995 shows a similar pattern, with the first three situations being ranked identically on both occasions.

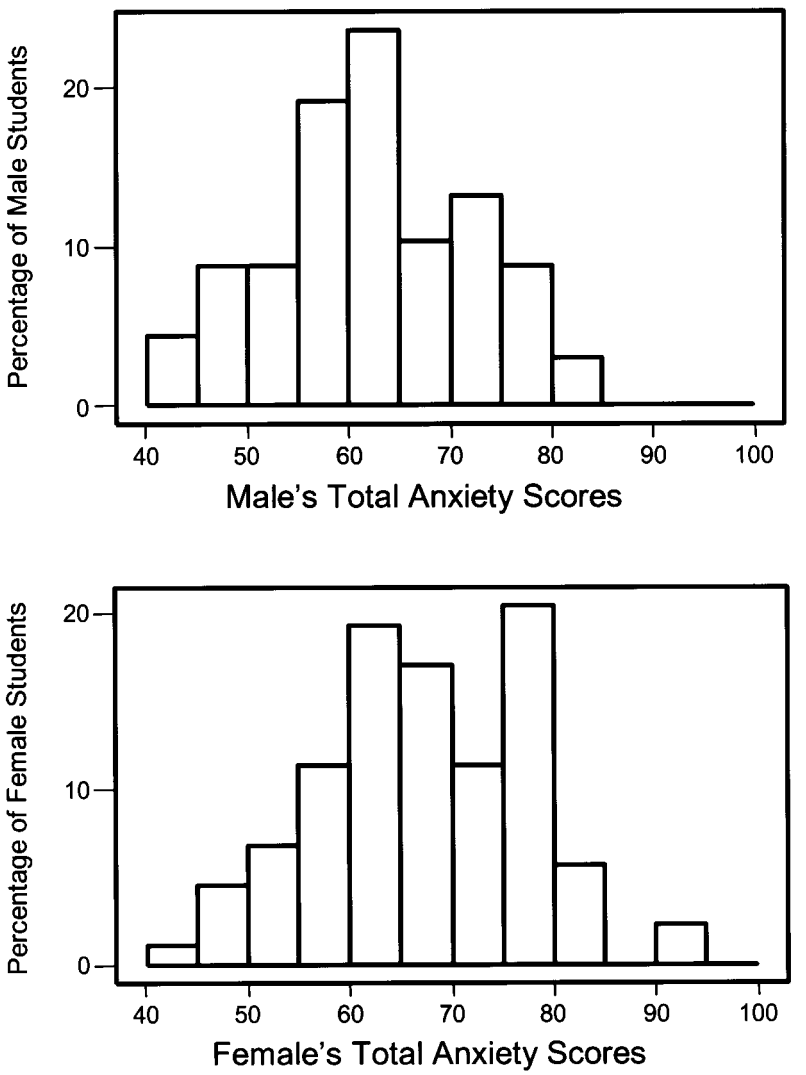

Figure 1. Total level of anxiety reported by individual students according to gender at Birmingham in 1995.

Table 2. Comparison of mean anxiety scores of male and female students from the 1995 data collection, at the beginning of their clinical training in rank order according to female scores

No.	Question	Category	Females (n=88) Mean score	Females (n=88) Rank	Males (n=68) Mean score	Males (n=68) Rank	Degree of statistical significance p-value; m=males higher score f=females higher score
1	Getting the diagnosis wrong	C1a	3.31	1	2.99	1	0.017 f
2	Presenting cases in tutorials or ward rounds	C1a	2.92	2	2.44	6	0.0008 f
3	Inadvertantly hurting patients		2.88	3	2.72	3	NS
4	Making diagnoses	C1a	2.84	4	2.35	7	0.0002 f
5	Helping with a cardiac arrest	C2	2.83	5	2.46	5	0.01 f
6	Dealing with drunk or abusive patients	C3	2.76	6	2.26	9	0.0007 f
7	Carrying out rectal examinations		2.75	7	2.62	4	NS
8	Carrying out vaginal examinations		2.68	8	2.76	2	NS
9	Dealing with psychiatric patients	C3	2.63	9	2.24	10	0.0022 f
10	Being asked difficult questions by patients	C1b	2.59	10	2.28	8	0.0046 f
11	Telling general practitioners or consultants that I do not know something	C1a	2.40	11	2.04	14.5	0.014 f
12	Getting infected by patients	C3	2.39	12	1.97	16.5	0.0045 f
13	Explaining to a patient that their diagnosis is not known		2.25	13	2.04	14.5	NS
14	Taking blood from patients	C2	2.22	14	1.74	23	0.0002 f
15	Examining patients	C2	2.16	15	1.88	18	0.016 f
16	Talking to seriously ill patients		2.14	16	2.09	12	NS
17	Interacting with other health professionals	C1a	2.10	17	1.69	24	0.0003 f
18	Giving injections	C2	2.09	18	1.76	21.5	0.019 f
19	Taking patient histories		1.98	19	1.84	19	NS
20	Being left alone with a sick patient		1.94	20	1.97	16.5	NS
21	Telling patients that I do not know something	C1b	1.91	21	1.68	25	0.048 f

Continued

Table 2. *(Continued)*

No.	Question	Category	Females (n=88) Mean score	Females (n=88) Rank	Males (n=68) Mean score	Males (n=68) Rank	Degree of statistical significance p-value; m=males higher score f=females higher score
22	Dealing with sick children		1.84	22	1.78	20	NS
23	Getting up early to be on time for clinic		1.77	23	2.10	11	NS
24	Talking to relatives of patients		1.69	24	1.65	26	NS
25	Undressing patients of the opposite sex	C4	1.57	25	2.06	13	0.0001 m
26	Taking blood pressures	C2	1.53	26	1.16	30	0.0001 f
27	Talking with patients		1.41	27	1.38	28.5	NS
28	Dealing with elderly patients		1.32	28	1.38	28.5	NS
29	Undressing elderly patients	C4	1.28	29	1.76	21.5	0.0000 m
30	Undressing patients of the same sex	C4	1.28	30	1.59	27	0.0016 m
31	Taking a pulse	C2	1.20	31	1.04	31	0.0042 f

Table 3. Cluster analysis for females, for 1995 cohort

Variable cluster number	Questions included in cluster	Question	Similarity level
1	7, 8	Carrying out rectal examinations, carrying out vaginal examinations	90.6
2	25, 30, 29	Undressing patients of the opposite sex, undressing patients of the same sex, undressing elderly patients	85.3
3	18, 14, 5, 3 15, 31, 26, 4	Giving injections, taking blood from patients, helping with a cardiac arrest, inadvertently hurting patients, examining patients, taking a pulse, taking blood pressures, making diagnoses	80.7
4	24, 16, 27, 20	Talking to relatives of patients, talking to seriously ill patients, talking with patients, being left alone with a sick patient	77.7
	13, 21, 11	Explaining to a patient that their diagnosis is not known, telling patients that I do not know something, telling general practitioners or consultants that I do not know something	76.1

Table 4. Cluster analysis for males, for 1995 cohort

Variable cluster number	Questions included in cluster	Question	Similarity level
1	7, 8	Carrying out rectal examinations, carrying out vaginal examinations	89.1
2	29, 25, 30	Undressing elderly patients, undressing patients of the opposite sex, undressing patients of the same sex	85.0
3	18, 14	Giving injections, taking blood from patients	78.6
4	2, 4, 17	Presenting cases in tutorials or ward rounds, making diagnoses, interacting with other health professionals	78.5
5	27, 24, 6, 16 9, 1, 3	Talking with patients, talking to relatives of patients, dealing with drunk or abusive patients, talking to seriously ill patients, dealing with psychiatric patients	78.2
6	1, 3	Getting the diagnosis wrong, inadvertently hurting patients	76.8
7	11, 21	Telling general practitioners or consultants that I do not know something, telling patients that I do not know something	75.4

Comparison of Scores by Females and Males for 1995 Cohort

Table 2 shows the mean score for each of the 31 situations covered in 1995. A *t*-test comparing mean scores for males and females for each of these situations individually showed that for 19 of them the difference in scores was statistically

significant. Of these 19 the female score was higher in 16 situations; male score was higher for three. The 16 situations in which female students scored significantly higher than males can be divided into three categories.

The largest category involves *threat to self-esteem or to the students' estimation of their own professional value* (C1 in Table 2). It can be further divided into two sub-categories: those situations involving threat in relation to other professionals (C1a), and those situations involving threat in relation to lay persons (C1b).

The second largest category concerns *technical procedures* (C2). The third category involves *situations involving threat to personal safety* (C3).

All three situations in which males gave a statistically significantly higher score than females involved *intimate contact with patients* (C4).

Cluster Analysis by Gender

Cluster analysis enables identification of questions which have been answered most similarly by respondents. Results for clusters which show greatest similarity levels are shown in Table 3 (females) and Table 4 (males). Listing of clusters was stopped when the similarity levels fell below 75%. In both cases there was also a marked drop in similarity level at this point. The two clusters showing the highest similarity levels, that is, the questions for which students tended to give the same score (whether 1, 2, 3 or 4) for all questions in the cluster, were the same for both males and females. Both clusters related to intimate procedures. For both men and women the third cluster related to technical procedures. The fourth cluster for females relates to interacting with patients while for males it concerns professionally related potential threats to self-esteem.

Anxiety Level among Individual Students, Ranked by Total Score

For any individual student the possible minimum total score was 31 (that is, scoring 1, not anxious, for every question); the maximum was 124 (scoring 4, very anxious, for every question). Mean total anxiety score for females was 66.7, a mean score per question of 2.15. Mean for males was 61.7 (mean score 1.99; SD 10.47 for females, 9.64 for males, t-test $p \leqslant 0.003$). The range of scores among females was 52 (42 – 94). The mean score per question for the female student with the lowest total score was 1.35, and 3.03 for the female student with the highest total score. Among males the range was 36 (44 – 80). The mean score per question for the male student with the lowest overall anxiety score was 1.42, and it was 2.58 for the male student with the highest total. Neither distribution differed significantly from a normal distribution.

Students were ranked according to their total scores for all 31 questions to reflect the level of anxiety felt by individual students. Figure 1 shows this data graphically. Of the top scoring quartile, 68% (28/41) were female and the remainder male. Of the bottom quartile, 58% (23/40) were male and the remainder female.

Discussion

This study highlights the differences in self-reported anxieties between male and female students on entering the clinical phase of their studies and is consistent with previously reported work on medical student anxieties and sources of stress (Firth, 1986; Richman & Flaherty, 1990; Moss & McManus, 1992). New clinical students are clearly significantly worried about some situations they expect to face. Many of their greatest anxieties are about relating to their teachers, the hospital consultants. Such anxieties can only contribute to the high levels of stress which medical students experience, described elsewhere (Allen, 1988, 1994; Arndt *et al*., 1986; Firth, 1986; Firth-Cozens, 1987; Kidson & Hornblow, 1982; Lloyd & Gartrell, 1981; Roos *et al*., 1977; Tooth *et al*., 1989).

Comparison of rankings between 1992 and 1995 Birmingham students shows that rankings were consistent over time for both genders, particularly for the higher ranked questions. More detailed analysis of the 1995 data shows that individual female students were more likely to have higher total scores than were male students. This was true for all of the 31 situations, apart from those involving intimate procedures (undressing patients of the opposite sex, undressing the elderly) and getting up early in the morning, in which male student scores were higher than female. These findings are consistent with those reported by other authors (Firth, 1986). Anxieties about undressing others have a different significance for men and women. It is likely that few male students will have been involved in any ''intimate'' care of others and therefore associate undressing predominantly with sexual situations. Female students on the other hand may have experienced a ''caring'' role within the family. Such an argument clearly does not apply to the problem of getting up in the morning, however. This was ranked fairly low among both men and women. Female students ranked interactions with teachers (presenting cases, getting diagnoses wrong) higher than the more clinical and intimate ones. Whether this is related to the continuing dominance of male consultants, particularly in teaching hospitals, and the effect of this on relationships between them and the female students, is uncertain. Allen (1988, 1994) comments on the problems female students have in interacting with consultants, especially with surgeons. Witz's (1992) analysis of the patriarchal nature of the medical profession is also consistent with this interpretation.

It appears that students' anxieties are common across different medical schools and are consistent over time. Male and female students have different anxieties. Women report being more anxious than men, both overall and for most individual situations. Given the nature of prevailing medical culture, it is possible that male students find it more difficult to admit to anxiety concerning particular situations. However, the consistency of rankings over time, and the face validity of those situations which are ranked higher by male students, tend to suggest that such an assertion is not supported by this data.

Conclusions

We should certainly be aware that medical students are anxious about ''starting on the wards''. It has been argued that a degree of ''stress'' may be beneficial in improving performance (Levitt, 1980, as referenced by Tooth *et al*. 1989), particularly for male students (Toews *et al*., 1997). However, the lack of correlation between examination performance and stress levels argues against this (Tooth *et al*., 1989) and suggests that such stress is unlikely to be of educational benefit (Moss *et al*., 1987). Whether the recent international changes in the medical curriculum (Elliott, 1999) with increased early contact with patients, particularly in the primary care context, will help to reduce student anxieties or simply change them is not clear. Murray *et al*. (1997) suggest that clinical skills can be learned equally well in the community as in hospitals and that such community experience may influence career choice (Murray & Modell, 1999). Macfarlane *et al*. (1998) reported that students learning clinical skills in the community setting contrasted the positive teaching techniques used there with the ''teaching by humiliation'' methods traditionally used in hospitals. Richman and Flaherty (1990) discuss the potentially negative effects that the traditionally male-oriented medical environment can have on female medical students and it may be that these students may find the community to be a less stressful learning environment. Gender-based comparisons of students' clinical skills learning experiences in community-based settings are an important focus for future research and should be encouraged in a variety of settings.

We suggest that we need to design our courses, and particularly the so-called ''Clinical Introductory Courses'', to ameliorate additional stresses on already pressured students. Since male and female students have different anxieties, we may need different strategies to deal with this. Perhaps, therefore, we also need to ensure that pre-clinical students have sufficient early contact with clinical teachers to allay the anxieties they are experiencing about contact with consultants and to counteract the ''anecdotes'' handed down from more senior students. Medical teachers, particularly those involved in the clinical introductory courses, need to be briefed, trained and aware of the needs of male and female students. Some degree of customisation of introductory courses should be introduced, such that those with different anxieties can have them addressed and begin to develop their skills within a supportive environment. The introduction of formal stress reduction courses and the strengthening of existing support mechanisms to run throughout medical training should be considered. It appears that career choices are significantly affected by student anxieties (Dillner, 1993; Field & Lennox, 1996) and the differential experiences (both anticipated in our data and reported by Firth in 1986) of male and female students. For this if no other reason changes are necessary. The earlier community-based clinical experiences being introduced in many schools in the UK and in other parts of the world may help reduce some of these non-productive anxieties.

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