

Cheating by pharmacy students: Perceptions, prevalence and comparisons

R. HARRIES, & P. M. RUTTER

Pharmacy Practice Division, School of Pharmacy and Biomedical Sciences, University of Portsmouth, Portsmouth, UK

Abstract

Dishonesty has been part of the educational system for as long as students have been educated. The extent to which this happens varies between institution and course studied. Recent work has shown the prevalence of dishonesty by pharmacy students to be high. This study aimed to add to this body of evidence and determine what students believed the penalty should be if caught. Staff and undergraduate students at Portsmouth University, United Kingdom were asked to complete a survey consisting of 16 scenarios that reflected dishonest activity. Results revealed 53% of students had participated in dishonest behaviour, with students more likely to cheat in coursework than written examinations. Students suggested relatively lenient punishment for acts of dishonesty, although fourth year students felt cheating in examinations warranted removal from the course. This was in line with academic views. Portsmouth students also exhibited lower levels of dishonest behaviour compared to previously published rates.

Keywords: *Pharmacy education, students, dishonesty, cheating*

Introduction

Dishonest student behaviour to achieve higher grades in assignments and examinations is not new or restricted to university establishments. Cheating is widespread, (Gaberson, 1997) with McCabe and Tate (1999) reporting that students who do not cheat are in the minority. Students may find it difficult therefore to differentiate what constitutes an act of plagiarism or cheating (Franklyn-Stokes and Newstead, 1995; Gaberson, 1997; Ng, Davies, Bates and Avellone, 2003).

What prompts a student to cheat is complex and multifactorial. Many authors have put forward reasons to explain dishonest activity. Baumeister and Scher (1988) noted that some individuals who practice academic dishonesty, prefer short-term risks for immediate benefits regardless of eventual or long-term cost. A study by Uhlig and Howes (1967) indicated that a large percentage of students would cheat at a particular assessment if the opportunity presented itself. Other authors have cited personal

characteristics, for example the propensity for more males to perform such activities (Norton, Tilley, Newstead and Franklyn-Stokes, 2001), the environment of higher education institutes (Thorpe, Pittenger and Reed, 1999), and because they feel it is easy to get away with (McCabe and Trevino, 1996). Hetherington and Feldman (1964), have suggested that students cheat because they feel the need of a challenge of such activities, or feel the need to fool the faculty or the school.

Within the healthcare community most attention has traditionally focused on medical students (Sierles, Hendrick and Circle, 1980; Anderson and Obenshain, 1994; Rennie, 2001), but more recent studies have looked at professions allied to medicine, such as nursing (Brown, 2002), dentistry (Odom, 1997) and pharmacy (Aggarwal, Bates, Davies and Khan, 2002; Ng et al., 2003). All studies irrespective of discipline found student dishonesty to be prevalent, although the levels of cheating and plagiarism varied.

Correspondence: P. M. Rutter, Pharmacy Practice Division, School of Pharmacy and Biomedical Sciences, University of Portsmouth, Portsmouth, UK. Tel: 44 023 92 843618. Fax: 44 023 92 843655. E-mail: paul.rutter@port.ac.uk

Of greatest interest to pharmacy are studies by Aggarwal et al. (2002) and Ng et al. (2003). The study by Aggarwal et al. (2002), which was conducted at two English Schools of Pharmacy, revealed that 80% of students had admitted to at least one form of academic dishonesty. Students were most likely to participate in activities ranked as low in severity by academic staff; this would range from handing work down to lower year groups, to use the cut and paste facility to take information from the internet. The study also noted male students were more likely to admit to incidences of academic dishonesty.

The paper by Ng et al. (2003) follows on from the work by Aggarwal et al. (2002). Semi-structured interviews were conducted to determine why pharmacy students cheat. Five themes were identified; institutional environment, study skills, assessment employed, personal qualities and course specific factors. These studies suggest that dishonesty is prevalent amongst pharmacy students and is due to many confounding issues. This study, unlike previous studies, explored not only whether students could differentiate in what constituted dishonest behaviour and whether they had participated in any, but also what punishments they believed should be metered out (if caught) and if student views differed from academic staff.

Method

All students studying at Portsmouth University in October 2003 were asked to complete a scenario-based survey to identify their perception of and participation in dishonest activities. Scenarios were drawn from previous work conducted by Aggarwal et al. (2002), which were supplemented by additional scenarios that were specific to problems experienced previously at Portsmouth University, (e.g. using programmable calculators to bring notes into written exams). This yielded 16 scenarios. For each of these scenarios, students had to state whether it was dishonest and what type of punishment should be given to a student if they were caught participating in that activity. Students had a six-point scale to choose from and were taken from the assessment regulations issued by the University of Portsmouth:

- (1) No punishment;
- (2) Warning only;
- (3) Re-take that piece of coursework/exam and the work capped at 40%;
- (4) The whole unit capped at 40%;
- (5) Retake the year; and
- (6) Removal from the course.

It is worth mentioning that the course structure at Portsmouth is a unitised system; students have to gain 120 credits per stage to progress to the next year and

most units have a credit value of 10 and a pass mark of 40%.

The second part of the survey concentrated on whether they had actually participated in any of the scenarios, (or something similar), and what impact the university policies have as a deterrent to stop people cheating. All academic members of staff who taught on the MPharm programme were also requested to complete the scenario-based section of the survey. Student surveys were distributed and collected by the lead author at the beginning of practical classes or lectures, to maximise response rates: Academic staff then received the survey via personal pigeonholes with a covering letter outlining the study.

Data were analysed using SNAP (Mercator) questionnaire analysis package. Non-parametric statistical tests were conducted using Minitab (Minitab Inc.).

Results

An overall response rate of 75% was achieved ($n = 435/580$), although variation between year groups and staff was observed (first year, 91%; second year, 57%; third year, 75%; fourth year, 74% and staff 68%).

Attitudes to the 16 scenarios depicting academic dishonesty are highlighted in Table I. It was apparent that students viewed written examinations and coursework differently. Students were more inclined to view scenarios involving written examinations as cheating compared to coursework-based scenarios. Almost every student from all years agreed that writing on arms, taking in revision notes (although, four of the five students who disagreed were first year students), programming notes in to a calculator, exchanging answers in a test and looking at the exam paper prior to the examination was cheating. However, in two examination scenarios, writing after an exam had finished (53%) and asking for help in a practical examination (59%) more than half the students thought the scenario not to be dishonest.

Fourth year students were significantly more likely ($\text{Chi}^2 = 42.8$, $\text{df} = 3$, $p < 0.0001$) to agree that writing after the exam had finished was cheating compared to other year groups. These views were similar to academic staff but no differences were observed when considering asking for help during a practical examination and the overall student opinion differed significantly from staff ($\text{Chi}^2 = 12.9$, $\text{df} = 1$, $p < 0.0001$).

In general, students did not perceive coursework to constitute dishonest behaviour to the same extent as examinations. Only where a student copied a colleague's coursework without their consent (97%), or copied work instead of doing it themselves (93%), did students agree this was cheating. Interestingly,

Table I. What constitutes cheating: Opinion of students' and staff (Yes = believe scenario to be dishonest).

Scenario		Yr. 1		Yr. 2		Yr. 3		Yr. 4		Total		Staff		No. of students who had done it
		%	<i>n</i>											
Exam scenarios														
A student uses written information on arm during a written exam	Yes	99.3	147	100	68	98	99	98.9	89	99	403	100	26	13
	No	0.7	1	0	0	2	2	1.1	1	1	4	0	0	
A student takes a sheet of revision notes in to a written exam	Yes	97.3	144	100	68	99	100	100	90	98.7	402	100	26	3
	No	2.7	4	0	0	1	1	0	0	1.3	5	0	0	
A student uses a calculator with notes programmed in to it in a written exam	Yes	99.3	147	98.5	67	98	99	100	90	99	403	100	26	9
	No	0.7	1	1.5	1	2	2	0	0	1	4	0	0	
During an in-class test students confer and exchange answers	Yes	96.6	142	97.1	66	91.1	92	95.6	86	95	386	92.3	2	32
	No	3.4	5	2.9	2	8.9	9	4.4	4	5	20	7.7	2	
A student arrives early for an exam and looks at the exam questions then looks at their revision notes	Yes	91.2	135	97	65	93.1	94	98.9	89	94.3	383	100	26	3
	No	8.8	13	3	2	6.9	7	1.1	1	5.7	23	0	0	
A student continues to write in a written exam after the allocated time	Yes	41.2	61	33.8	23	38.6	39	77.5	69	47.3	192	84.6	22	45
	No	58.8	87	66.2	45	61.4	62	22.5	20	52.7	214	15.4	4	
During a practical exam a student asks a colleague for help	Yes	40.8	60	47.1	32	32	32	46.7	42	41	166	76.9	20	70
	No	59.2	87	52.9	36	68	68	5.3	48	59	239	23.1	6	
Coursework														
A student cuts and pastes work from the internet for coursework without reference to the work	Yes	77.7	115	76.5	52	62.4	63	83.3	75	74.9	305	92.3	24	20
	No	22.3	33	23.5	16	37.6	38	16.7	15	25.1	102	7.7	2	
Instead of doing coursework for him/herself a student copies the work from a colleague	Yes	94.6	139	94.1	64	85.1	86	95.6	86	92.4	375	100	0	19
	No	5.4	8	5.9	4	14.9	15	4.4	4	7.6	31	0	0	
A student copies a colleague's coursework without their consent	Yes	97.3	144	98.5	67	93	93	98.9	89	96.8	393	100	26	7
	No	2.7	4	1.5	1	7	7	1.1	1	3.2	13	0	0	
A student copies text directly from a textbook for coursework without reference to the work	Yes	65.5	97	55.9	38	40.8	40	80	72	61.1	247	88	22	38
	No	44.5	51	44.1	30	59.2	58	20	18	29.9	157	12	3	
A student copies a colleague's coursework with their consent	Yes	81.8	121	69.1	47	52.5	53	76.4	68	71.2	289	100	26	48
	No	18.2	27	30.9	21	47.5	48	23.6	21	28.8	117	0	0	
A student gains no results during a practical class and so makes the results up	Yes	55.1	81	35.3	24	24.2	24	70.8	63	48.9	192	100	25	67
	No	44.9	66	64.7	44	75.8	75	29.2	26	51.1	201	0	0	
A student receives work from the year above to use to complete coursework	Yes	47.7	70	32.8	22	38.6	39	68.9	62	47.7	193	92.3	24	70
	No	52.4	77	67.2	45	61.4	62	31.1	28	52.3	212	7.7	2	
A student passes work down to lower groups for them to use to complete coursework	Yes	43.5	64	35.3	24	26.3	26	62.9	56	42.2	170	91.7	22	68
	No	56.5	83	64.7	44	73.7	73	37.1	33	57.8	233	8.3	2	
Working in groups on coursework when individual work is expected	Yes	34.5	50	22.7	15	14	14	44.9	40	30	119	61.5	16	102
	No	65.5	95	77.3	51	86	86	55.1	49	70	281	38.5	10	

if student consent for their work to be copied was obtained, a lower percentage (71%) deemed this to be cheating. Over 50% of students thought falsifying practical results, working as a group when individual work was called for, using higher year groups' work and passing it off as their own and the actual passing of work to others was not cheating. In addition, a higher percentage of students believed citing material from another source, be it a textbook (61%) or the internet (75%) was not wrong. Attitude of fourth year students did show some variation to other year groups. They were significantly more likely to believe not referencing work ($\text{Chi}^2 = 32.5$, $\text{df} = 3$, $p < 0.0001$), falsifying practical results ($\text{Chi}^2 = 48.3$, $\text{df} = 3$, $p < 0.0001$), and either passing work down to lower years ($\text{Chi}^2 = 27.4$, $\text{df} = 3$, $p < 0.0001$) or using such work ($\text{Chi}^2 = 25.5$, $\text{df} = 3$, $p < 0.0001$) was dishonest. Despite fourth years exhibiting these opinions, academic staff were still significantly more likely to say falsifying results ($\text{Chi}^2 = 9.4$, $\text{df} = 1$, $p < 0.002$), passing work to lower years ($\text{Chi}^2 = 7.3$, $\text{df} = 1$, $p < 0.007$) and using this work ($\text{Chi}^2 = 5.8$, $\text{df} = 1$, $p < 0.0016$) was dishonest compared to fourth year opinion.

The number of students admitting to doing each scenario is also shown in Table I. The number of instances they were conducted are summarised in Table II. It appears that students do engage in dishonest behaviour, especially those involving coursework. Even though more students perceived coursework misdemeanours not to be dishonest, proportionally they were less inclined to actually undertake the scenario than an examination-based scenario. In three of the examination-based scenarios, the number of students actually committing the offence exceeded the number who thought the behaviour was not cheating. Table II reveals that 53% ($n = 217$) of students admitted to at least one instance of dishonesty, with fourth year students reporting the highest (62%) rate. Students were two and a half times more likely, (176 versus 439 instances), to undertake a coursework offence than a written examination.

Further analysis (Table III) identified that first years were most likely to admit to undertake just one of

Table III. Number of scenarios each student admitted to participating in

Number of scenarios participated in	Year 1	Year 2	Year 3	Year 4
1	26	5	4	6
2	14	7	12	13
3	15	6	4	9
4	9	8	8	1
5	1	4	6	3
6	2	3	2	12
7	3	1	3	6
8	1	1	3	2
9	4	1	1	2
10		1	0	1
11			1	0
12			1	1
13			0	
14			1	
15			2	
Total	75	38	48	56

the 16 scenarios. However, as students progressed through the course the number of instances each person performed tended to increase. Although in the third year the number of students admitting to dishonesty was the lowest of all four years, it appeared to have the greatest number of persistent offenders, with three students admitting to commit 14 or 15 of the 16 scenarios.

The punishment suggested by staff and students ranged from nothing to removal from the course (Table IV). Students wanted harsher sanctions for those scenarios that involved written examinations, (except for when asking a colleague for help during a practical exam, where no punishment was suggested), or those which the student perceived as cheating. For example, taking revision notes in to an exam, using a pre-programmed calculator, writing on an arm and a fellow colleague copying coursework without consent. Punishment for these scenarios ranged from re-taking that piece of coursework/exam and capping the work at 40%, to removal from the course. Interestingly, fourth year students and academics agreed that the three examination scenarios above should warrant removal from the course and were different to years one to three who all suggested capping work at 40%. The only other scenario in which fourth year students and staff thought removal from the course was warranted, was if a student arrived early for an exam and looked at the exam questions then their revision notes before sitting the exam.

In general, academic staff were in favour of harsher penalties for both examination and coursework scenarios. Indeed staff never chose the option of no penalty for any scenario where as students felt no penalty to be appropriate if caught asking a colleague for help in a practical exam (all years), using coursework from higher years

Table II. Reported rates of dishonesty by students.

Number of students admitting to undertaking academic dishonesty	Number of instances students admitted to academic dishonesty		
	Written Examination	Coursework	Total
Year one ($n = 75/163$, 51%)	43	102	145
Year two ($n = 38/123$, 54%)	30	76	106
Year three ($n = 48/135$, 48%)	55	130	185
Year four ($n = 56/121$, 62%)	48	131	179
All years ($n = 217/409$, 53%)	176	439	615

Table IV. Penalty suggested by students and staff for conducting each scenario (modal value).

	Yr. 1	Yr. 2	Yr. 3	Yr. 4	Staff
Exam scenarios					
A student uses written information on arm during a written exam	3	3	3	6	6
A student takes a sheet of revision notes in to a written exam	3	3	3	6	6
A student continues to write in a written exam after the allocated time	2	2	2	2	2
A student uses a calculator with notes programmed in to it in a written exam	3	3	3	3	6
During an in-class test students confer and exchange answers	3	3	2	3	3
During a practical exam a student asks a colleague for help	1	1	1	1	3
A student arrives early for an exam and looks at the exam questions then looks at their revision notes	3	4	2	6	6
Coursework scenarios					
A student cuts and pastes work from the internet without reference to the work	3	3	2	2/3	4
A student copies text directly from a textbook without reference to the work	2	3	2	2	3
A student gains no results during a practical class and so makes the results up	2 or 3	1	2	2	2 or 3
Instead of doing coursework for him/herself a student copies the work from a colleague	3	3	3	3	3
Working in groups on coursework when individual work is expected	2	1	1 or 2	2	2
A student receives work from the year above to use to complete coursework	1	1	1	3	3
A student copies a colleague's coursework with their consent	3	3	2	3	3
A student copies a colleague's coursework without their consent	3	3	3	3	3
A student passes work down to lower groups for them to use to complete coursework	1	1	1	1 or 2	3

(years one to three) and passing coursework down to lower years (all years).

Students were further asked about the University's disciplinary procedures. Two-thirds (65.7%, $n = 253$) thought the policies in place did act as a deterrent to stop students cheating and a similar number (69.1%, $n = 277$) thought the penalties at the University's disposal were appropriate. However, the further the student progressed through the course the more likely (Chi^2 test for trend = 46.4, $df = 3$, $p < 0.0001$) they were to say that policies were inadequate and the penalties imposed were too lenient (Chi^2 test for trend = 113, $df = 6$, $p < 0.0001$).

This study used eight identical questions to those used by Aggarwal et al. and a comparison between that and this study is shown in Tables V and VI. Views held by Portsmouth students were very similar to those from the other two Schools of Pharmacy. Just one question saw any difference in opinion between Portsmouth students and those investigated by Aggarwal et al. Portsmouth students were more likely to agree that borrowing coursework with permission was dishonest compared to school one

($\text{Chi}^2 = 34.1$, $df = 1$, $p < 0.0001$) but no difference in the opinion of students from school two.

Whilst students from all three schools were in agreement on what constituted cheating, the numbers that went on to conduct that or a similar scenario were different. Apart from those students who admitted to taking hidden notes in to a written examination, Portsmouth students reported much lower levels of actually participating in dishonest behaviour than the other two schools. All coursework scenarios and one examination scenario (asking for a colleague for help during a practical exam), saw a significant difference at $p < 0.0001$ level apart from copying coursework without their consent ($p = 0.004$).

Discussion

The results from this study support the view that cheating by pharmacy undergraduate students is common, although reported levels in this study were lower than those found by Aggarwal et al. (2002). Various reasons could account for this, including: students at Portsmouth may be less inclined to admit

Table V. A comparison of student attitude toward cheating between Portsmouth and two other Schools of Pharmacy

Scenario	School one <i>n</i> = 294		School two <i>n</i> = 184		Portsmouth <i>n</i> = 409	
	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>
Written Examinations						
A student uses written information on arm during a written exam	96.2	281	96.2	177	98.7	402
A student takes a sheet of revision notes in to a written exam	96.9	285	96.2	176	99	403
During a practical exam a student asks a colleague for help	34	99	35.9	66	41	166
Coursework						
A student copies a colleague's coursework with their consent	39.3	114	68.3	125	71.2	289
A student copies a colleague's coursework without their consent	86.6	253	90.7	166	96.8	393
A student copies text directly from a textbook for coursework without reference to the work	55.1	161	57.4	105	61.1	247
A student gains no results during a practical class and so makes the results up	40	116	65.9	120	48.9	192
A student passes work down to lower groups for them to use to complete coursework	45.7	133	62.6	114	42.2	170

to dishonesty, they may genuinely participate in less dishonest behaviour or they have fewer opportunities to cheat. This latter point may have some validity as the number of students who cheated was generally lower than the number who thought the activity was not dishonest.

Despite lower levels of dishonest behaviour, Portsmouth students appeared to have similar belief values with regard to what constituted dishonest behaviour and perceived cheating in examinations to be more serious than offences involving coursework. Consequently, most students assigned harsher penalties to such scenarios but the level of severity was less harsh than those suggested by academic staff. Exceptions to this were the fourth year student opinion. They shared the same views as academic staff that the penalty should be removal from the course.

Greater intolerance to dishonesty by fourth year students compared to lower year groups may result

from this cohort knowing, or heard of, such acts being committed but those people being allowed to continue on the course despite disciplinary action being taken against them. Honest students may therefore harden their opinion toward cheating behaviour. Further evidence to support a less tolerant opinion to dishonesty was their opinion that university policy on cheating was not strict enough. Secondly, fourth year students nearing completion of the course may have developed a more mature and professional attitude. The profession expects its members to have high morale, ethical and professional standards and student attitude may change as they near the start of their careers that embraces these standards. Changes in student attitude as they progress through the course warrant further attention. Only, Ng et al. (2003) have studied differences between year groups, (first and fourth year students), but this was more to ascertain the drivers that influence dishonest behaviour and not why their attitudes toward sanctions change.

Table VI. A comparison of the levels of admitted dishonesty between Portsmouth and two other Schools of Pharmacy.

Scenario	School one <i>n</i> = 294		School two <i>n</i> = 184		Portsmouth <i>n</i> = 409	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Written examinations						
A student uses written information on arm during a written exam	4	1.4	2	1.1	13	3.2
A student takes a sheet of revision notes in to a written exam	13	4.5	5	2.8	3	0.7
During a practical exam a student asks a colleague for help	96	33.3	64	35.4	70	17
Coursework						
A student copies a colleague's coursework with their consent	97	33.8	47	25.7	48	12
A student copies a colleague's coursework without their consent	19	6.6	9	4.9	7	1.7
A student copies text directly from a textbook for coursework without reference to the work	76	26.5	34	18.8	38	9.3
A student gains no results during a practical class and so makes the results up	202	70.6	77	42.3	67	16.4
A student passes work down to lower groups for them to use to complete coursework	131	45.5	66	36.3	68	16.6

It appears that cheating behaviour is driven by many things and it is unlikely any two individuals will have exactly the same motivating or influencing factors that resort in that person performing dishonest acts. Many valid reasons have been put forward why students cheat but this does not address the problem of controlling or ideally stopping students from participating in such activity. Perhaps it is time to stop trying to identify the causes but think about solutions?

The term institutionalised has been used to describe dishonest behaviour (Ng et al. 2003) and if this is indeed the case, then Schools of Pharmacy must communicate with students from the very first day on what is acceptable and not acceptable behaviour. Fifty percent of first year students admitted to academic dishonesty, yet the survey was only distributed in February 2004, six months in to their studies. The opportunities they therefore had to participate in dishonest activity were limited to coursework and examinations in just one semester. This implies that students do not 'learn' to be dishonest on entering university but must bring characteristics of academic dishonesty with them from school and colleges.

McCabe and Tate (1999), who reported that cheating in colleges in the United States had reached epidemic proportions, support this view. What can be done then to instil in to the student body that academic dishonesty is unacceptable? Most Schools of Pharmacy are increasing their student numbers yet staffing levels do not appear to be keeping pace. Larger student cohorts with decreased staff-student ratios may afford greater opportunities for students to cheat and make it more difficult for staff to detect. (McCabe and Trevino, 1996; Thorpe et al. 1999).

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All Schools give out a "student handbook" which outlines the university policies on cheating and plagiarism but Fosbinder (1991) states that these are infrequently read and, more importantly, may not be well understood. One of the key findings by Ng et al. (2003) was the lack of understanding that first year students had on what constituted dishonesty. It is therefore incumbent on staff to ensure students know what is right and wrong. Measures could be put in place during the student induction programme to ensure core qualities, which define the profession such as honesty, dedication, empathy, compassion and integrity are covered. If students understand from very early on in the course as to what defines a pharmacist and what the Royal Pharmaceutical Society of Great Britain expects from its members then this may make students think twice before acting dishonestly. Honour codes and contracts between the student and the institute have been used by other healthcare courses (Bradshaw and Lowenstein, 1990) to engender in the student body academic honesty. This may be one way to reinforce core values.

Not only do ground rules need to be established and understood but also the method of assessment may need to be reviewed. Coursework is primarily the method by which students cheat. This does not necessarily mean reverting back to examinations. Nor should it, as most Schools of Pharmacy encourage collaborative and self-directed learning. What is important though is to ensure the correct assessment tool is used. For example, competency based assessment is one way in which individual performance can be assessed over a range of skills both in a theoretical or clinical situation.

With increasing student numbers picked from a decreasing pool of suitable "A" level candidates being taught to "M" level the question is will more students be tempted in to acting dishonestly to attain grades they need?

Conclusion

This and other studies involving UK Schools of Pharmacy point to a high prevalence of academic dishonesty amongst students. Strategies need to be put in place to raise student awareness of what constitutes unacceptable behaviour and at the same time contextualising the consequences their actions may have on patients.

Acknowledgements

Thanks to Ian Bates, School of Pharmacy, University of London for allowing data to be taken from the study published in *The Pharmaceutical Journal* 2002; 269: 529–532.

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Author Queries

JOB NUMBER: 102586

JOURNAL: GPHE

- Q1** Thorpe et al. inside the text has been changed to Thorpe et al., 1999 to match the reference list.
- Q2** Baldwin et al.,1996 has not been cited in the text, please add or delete from reference list.
- Q3** Table III caption is incomplete. Please check