Study Skills, Social Life and Confidence in Undergraduate Medical Students

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Categories: Assessment, Students/Trainees

Abstract

Background: The transition into medical education can cause frustration, poor academic performance and disengagement from study. The factors contributing to success require thorough investigation to allow medical education institutions to understand the contextual factors surrounding achievement. This study aims to identify the relationships between educational and wider contextual factors and the impact on academic performance.

Methods: A 17-item questionnaire was developed and disseminated throughout a UK-based medical school. The question schedule was constructed from major literature items on study skills, study habits, performance, confidence and local contextual factors.

Results: 162 respondents across four years of medical education provided information on their living circumstances, familial doctor status, time management (studying, socialising, extra-curricular, and sports), exam confidence and preparedness, perceived ability and commitment to study, study skills and summative examination performance. The headline results include very low engagement in physical activity, significant time-investment in study, low rates of sharing a residence with medical student colleagues, good levels of confidence and low levels of self-perceived preparedness for summative examinations.

Discussion: The findings reinforce the importance of confidence building in medical students, and the requirement for study skills development programmes and exceptional medical education learning resources. Finally, it is surprising that a significant proportion of medical students utilise paid-subscription question banks in their preparations, which itself raises questions surrounding resource allocation and equity.

Keywords: study skills; confidence; undergraduate education

Introduction

Once students matriculate at medical school, those who once found themselves at the top of their school class, often realise their academic performance is average, if not below average, when compared to their highly talented and
academically-able peers within medical school cohorts (Juma, Abas and Banu, 2016). The transition from the comparatively stable, didactic schooling to the drastically different reality of medical school is challenging, where the volume of educational material is significant and the time to process learning is minimal. This transition can be frustrating, and students often find themselves calling for study skills support (Medical Schools Council, 2014; Patel et al., 2015).

Academic success within medical school requires students to manage their time efficiently, develop excellent study skills and be able to resist distractions (McManus et al., 1998). Students in medical education are adult learners and thus are expected to be effective in using strategies to achieve maximally. Effective learning in higher education is driven by a number or inter-linked factors, including the academic environment, nature and quality of educational resources, cognitive levels of students and intrinsic levels of motivation (Medical Schools Council, 2014; Cebeci et al., 2013).

The literature defines ‘study skills’ as a student’s knowledge and mastery of study strategies, management of time and other resources deemed necessary to meet the demands of the academic curriculum (Credé and Kuncel, 2008). ‘Study habits’ typically denotes the degree to which the student engages in regular acts of studying that are characterised by appropriate study routines, occurring in an environment considered conducive to study (Mendezabal, 2013). The literature relating to the typology of learning styles amongst undergraduate health professional students is limited. It does, however, highlight the benefits of deep learning strategies versus surface apathetic strategies with regards to summative examination performance (Chessel, 1986).

It is naive to attribute performance in high-stake medical examinations solely to the study skills and habits of students. There is a vast array of factors which impact both positively and negatively on performance, ranging from academic profiles, student characteristics, lifestyle, learning environment, confidence, understanding of the curriculum and examination processes and inter-personal relationships (Medical Schools Council, 2014; Todres et al., 2012).

The aim of this research is to identify any relationships between educational and wider contextual factors, impacting both directly and indirectly on academic performance, in addition to determining the confidence and preparedness levels of students from years 1 – 4 studying medicine at a university in the United Kingdom.

**Methods**

Medical students at the University of Liverpool enrolled in years 2-5 during the academic year 2017-2018 were invited to participate in a 17-item questionnaire (Supplementary Item 1). The temporal focus of the questionnaire was the previous academic year; 2016-2017, thereby focusing on academic years 1-4. Data collection was facilitated via an electronic survey (SurveyMonkey) and distributed by a School of Medicine staff member to student's university email account in March 2018. As part of the email invitation, recipients received a copy of the project's ethical approval (Reference 2929) and a participant information document. A reminder email was sent out two weeks after the initial invitation to encourage participation. No incentive was offered for participation.

The contents of the questionnaire were constructed from various literature items on study skills, study habits, performance and confidence, and local contextual factors with implications for education delivery at an institutional level (Juma, Abas and Banu, 2016; Medical Schools Council 2014; Cebeci et al., 2013; Mendezabal, 2013; Chessel, 1986). The questionnaire was piloted on 12 students prior to wider dissemination to ensure functionality, syntax, and to avoid overlooking errors. The components of summative examination differ slightly between academic years, and this was reflected in the questionnaire. All years of study (1-4) sit two written papers, focusing on clinical science, public health and clinical medicine, and an Objective Structured Clinical Examination, which is an assessment of
clinical competency. Students in Year 4 sit an additional examination: Liverpool Objective Clinical Assessment System (LOCAS), which is a clinical examination involving real patients. The raw score from each summative component translates to a banded score ranging from 85 (completely competent) to 45 (re-sit required). OSCE and LOCAS performance is graded as pass or fail, and not banded.

Results/Analysis

Participant Characteristics

162 medical students at the University of Liverpool responded to the questionnaire. Participation was evenly distributed across years of study; 27% (year 1), 24% (year 2), 19% (year 3) and 25% (year 4). 68% of respondents were female (Table 1). 78% (n=127) of respondents did not have any doctor(s) in their immediate family. 22% (n=35) of the students stated they have doctor(s) in their family (Table 1). 53% of respondents (n=85) live with other medical students, in which a sizeable proportion share their residents with non-medical students (62%, n=53). Of the 53% of respondents not living with other medical students, the majority of these share their home with non-medical students (62%, n= 48) (Table 1).

Table 1: Participant characteristics

| Characteristic                              | n (%)     |
|---------------------------------------------|-----------|
| **Sex**                                     |           |
| Male                                        | 51 (31.9) |
| Female                                      | 109 (68.1)|
| **Year of study**                           |           |
| Year 1                                      | 44 (27.2) |
| Year 2                                      | 39 (24.1) |
| Year 3                                      | 30 (18.5) |
| Year 4                                      | 40 (24.7) |
| Intercalators                               | 9 (5.6)   |
| **Doctor in the family status**             |           |
| No                                          | 127 (78.4)|
| Yes                                         | 35 (21.6) |
| Mother                                      | 14 (40.0) |
| Father                                      | 25 (71.4) |
| Sibling                                     | 9 (25.7)  |
| Partner                                     | 9 (25.7)  |
| **Living arrangements**                     |           |
| With other medical students                 | 85 (52.5) |
| Medical students only                       | 53 (62.4) |
| Medical and non-medical students            | 32 (37.6) |
| No other medical students                   | 77 (47.5) |
| Non-medical students only                   | 48 (62.3) |
| Living alone                                | 7 (9.1)   |
| Family / partners                           | 22 (28.6) |

Time Management
The majority of respondents spend between 5-10 hours (n=55, 34%) and 10-20 hours (n=58, 36%) socialising per week. Only 4% (n=6) of respondents spend more than 40 hours a week socialising with friends and family per week (Table 2). The majority of students spend less than 5 hours per week engaging in sporting activities (n=100, 62%). 92% of students spend less than 10 hours per week participating in extra-curricular activities (n=147), with a preponderance to commit less than 5 hours per week (n=96, 60%) (Table 2). The modal interval for time spent studying outside of scheduled teaching / university educational sessions is 10-20 hours (n=55, 34%). Nearly 10% of respondents (n=15) spend over 30 hours per week studying. Importantly, nearly 15% (n=20) spend less than 5 hours per week studying (Table 2).

The time management factors associated with higher performance in written assessments were 30-40 hours socialising per week, 10-20 hours of sporting activity per week, 10-20 hours of extra-curricular activity per week, and 30-40 hours of study outside of scheduled teaching / university educational sessions (Table 2). The factors associated with lower performance in written assessments include 5-10 hours socialising, 0-5 hours sporting activity, 10-20 hours extra-curricular activity, and 0-5 hours studying per week (Table 2).

**Table 2**: Time management and performance in written assessment and OSCE relating to time invested in socialising, sport, extra-curricular activities and studying. – indicates insufficient data.

| Time management | n (%) | Written papers ratio (85 or 75 banding ; 65 banding or re-sit) | OSCE pass rate (%) |
|-----------------|-------|---------------------------------------------------------------|-------------------|
| **Socialising** |       |                                                               |                   |
| 0 – 5 hours     | 13 (8.1) | 3.3                                                           | 100               |
| 5 – 10 hours    | 55 (34.2) | 2.7                                                           | 92.1              |
| 10 – 20 hours   | 58 (36.0) | 3.2                                                           | 95.2              |
| 20 – 30 hours   | 25 (15.5) | 3.4                                                           | 90                |
| 30 – 40 hours   | 10 (6.2)  | 4                                                             | 75                |
| > 40 hours      | 0 (0)    | –                                                             | –                 |
| **Sport**       |       |                                                               |                   |
| 0 – 5 hours     | 100 (61.7) | 2.6                                                          | 93.8              |
| 5 – 10 hours    | 47 (29.0) | 4.5                                                           | 90.3              |
| 10 – 20 hours   | 13 (8.0)  | 5.0                                                           | 100               |
| 20 – 30 hours   | 1 (0.6)   | –                                                             | –                 |
| 30 – 40 hours   | 1 (0.6)   | –                                                             | 100               |
| > 40 hours      | 0 (0)    | –                                                             | –                 |
| **Extra-curricular** | |                                                               |                   |
| 0 – 5 hours     | 96 (60)  | 3.7                                                           | 92.3              |
| 5 – 10 hours    | 51 (31.9) | 2.3                                                           | 96.9              |
| 10 – 20 hours   | 7 (4.4)   | 6.0                                                           | 66.7              |
| 20 – 30 hours   | 5 (3.1)   | 2.7                                                           | 100               |
| 30 – 40 hours   | 2 (1.3)   | 4.0                                                           | 100               |
| > 40 hours      | 0 (0)    | –                                                             | –                 |
| **Studying**    |       |                                                               |                   |
| 0 – 5 hours     | 20 (12.3) | 0.9                                                           | 86.7              |
| 5 – 10 hours    | 40 (24.7) | 1.3                                                           | 96.4              |
| 10 – 20 hours   | 55 (34.0) | 1.8                                                           | 91.4              |
| 20 – 30 hours   | 32 (19.8) | 2.2                                                           | 94.7              |
| 30 – 40 hours   | 9 (5.6)   | 2.8                                                           | 100               |
| > 40 hours      | 6 (3.7)   | 2.5                                                           | 100               |
Respondents report their efforts in terms of time spent studying compared to their peers as mostly the ‘same’ (n=75, 46%) (Table 3). The majority of respondents feel their academic ability is the ‘same’ as their peers (n=97, 60%) (Table 3). There is an association between both perceived time spent studying and perceived academic ability compared to peers and performance in written assessment (Table 3). Interestingly, those who perceive their academic ability to be ‘less’ than their peers, actually perform superiorly in written assessments compared to those who perceive their ability to be the ‘same’ as their peers (ratio 85 or 75 banding: 65 banding or re-sit: 2.9 versus 2.5) (Table 3).

Table 3: Time spent studying and academic ability versus peers, and performance in written assessment and OSCE. 

| Time spent studying and academic ability versus peers | n (%) | Written papers ratio (85 or 75 banding: 65 banding or re-sit) | OSCE pass rate (%) |
|------------------------------------------------------|-------|---------------------------------------------------------------|-------------------|
| Time spent studying versus peers                     |       |                                                               |                   |
| Significantly less time spent studying                | 13 (8.0) | 0.1 | 70 |
| Less time spent studying                             | 37 (22.8) | 2.6 | 95.5 |
| Same amount of time spent studying                   | 75 (46.3) | 4.1 | 94.1 |
| More time spent studying                             | 30 (18.5) | 17.0 | 100 |
| Significantly more time spent studying               | 7 (4.3) | 11.0 | 100 |
| Academic ability versus peers                        |       |                                                               |                   |
| Significantly less academically able                 | 1 (0.6) | 1 | - |
| Less academically able                               | 31 (19.1) | 2.9 | 90.5 |
| Same academic ability                                | 97 (59.9) | 2.5 | 93.1 |
| More academically able                               | 29 (17.9) | 9.8 | 95 |
| Significantly more academically able                 | 4 (2.5) | 7.0 | 100 |

The majority of respondents felt ‘quite well prepared’ for the written assessments (n=78, 51%) and OSCE (n=50, 51%). There is an association between preparedness for assessment and performance, with those feeling ‘very well prepared’ as significantly more likely to achieve a higher banding than those ‘not very prepared’, ‘not at all prepared’ or ‘neither’ (Table 4).

Table 4: Perceived preparedness versus performance in written assessment and OSCE.

| Preparedness for written papers | n (%) | Written papers ratio (85 or 75 banding: 65 banding or re-sit) | OSCE pass rate (%) |
|---------------------------------|-------|---------------------------------------------------------------|-------------------|
| Not at all prepared             | 4 (2.6) | 0.6 | 100 |
| Not very prepared               | 25 (16.2) | 0.7 | 80 |
| Neither                         | 23 (14.9) | 2.8 | 100 |
| Quite well prepared             | 78 (50.6) | 5.1 | 93.6 |
| Very well prepared              | 24 (15.6) | 14.7 | 100 |
| Preparedness for OSCE           |       |                                                               |                   |
| Not at all prepared             | 3 (2.8) | 100% | |
| Not very prepared               | 17 (15.7) | 80 | |
| Neither                         | 10 (9.3) | 100 | |
| Quite well prepared             | 55 (50.9) | 93.6 | |
| Very well prepared              | 23 (21.3) | 100 | |
Reviewing previously written notes (n=113), online educational videos (n=105) and core medical textbooks (n=103) were the most utilised study methods. Reviewing previously written notes (n=99), core medical textbooks (n=85) and revision lectures (n=84) were the perceived study methods with the greatest utility in preparing respondents for summative assessments (Table 5).

Table 5: Study methods as one of the top 5 utilised or top 5 utility.

| Study methods                        | Top 5 utilised: n (%) | Top 5 utility: n (%) |
|--------------------------------------|-----------------------|---------------------|
| Revision courses                     | 23 (14.2)             | 26 (16.0)           |
| Revision lectures                    | 101 (62.3)            | 84 (51.9)           |
| Paid-subscription question banks     | 71 (43.8)             | 75 (46.3)           |
| Question books                       | 68 (42.0)             | 64 (39.5)           |
| Core medical textbooks              | 103 (62.8)            | 85 (52.5)           |
| Online educational videos           | 105 (64.8)            | 76 (46.9)           |
| Podcasts                             | 8 (4.9)               | 4 (2.5)             |
| Live demonstrations                  | 5 (3.1)               | 3 (1.9)             |
| Reviewing previously written notes  | 113 (68.9)            | 99 (61.1)           |

Discussion

This is the first study to investigate the relationships between confidence, preparedness, study methods and examination performance in medical students.

It is interesting to note that 50% of respondents do not live with their medical student colleagues, which may be a factor influencing the amount of time invested in sports, social activities, extra-curricular activities and studying. It does appear that a balanced approach to student life is associated with the greatest performance in written assessments, and this is reflected in guidance by the Medical Schools Council (MSC) and General Medical Council (GMC) (Medical Schools Council, 2014). It is concerning to report that a sizeable proportion of medical students are not engaging in physical activity in accordance with national exercise guidance, and this is likely to have an impact on the mental and physical wellbeing of students. It is also pertinent to mention that investing >40 hours of studying outside of core university teaching / educational sessions is not associated with high examination performance, and that performance drops significantly when very little of the student’s time is invested in study.

Traditionally students tend to underestimate both their academic ability and their time investment in academic study (Wilkinson, Wells and Bushnell, 2007), however, this was not reflected in this study. This may be the result of the participants reflecting retrospectively on the previous academic year, thus knowing the outcome of their examinations, making the likelihood of recall and response bias high.

It is important to appreciate that a sizeable proportion of students do not feel prepared for summative examinations, and that preparedness is strongly associated with academic performance. This underpins the importance of building confidence in medical students, and to support them in their preparations for examinations through the provision of study skill development programmes and exceptional medical education learning resources (Medical Schools Council, 2014).

It is surprising that such a significant proportion of medical students utilise paid-subscription question banks in their preparations, which itself raises questions surrounding resource allocation and equity, potentially disadvantaging those without the financial resources to fund educational resources not provided by the School of Medicine. This is an original finding and warrants further investigation.
The study presented has a number of limitations. There is the potential that the sample of students participating are not necessarily representative of the wider cohort, and more likely to be of higher academic ability; however, the self-reported academic ability of participants was distributed equally across the categories (academic ability versus peers: significantly less able to significantly more able). As discussed previously, there is the potential for recall bias, in addition to the fact that summative performance was self-reported by the participants, and not provided by the assessment team within the School of Medicine. It is important to mention that due to the low response rate to the questionnaire, it is only possible to demonstrate associations, with the inability to demonstrate any form of statistical significance. It is therefore not possible as a result of this study to confirm any relationship between study methods, preparedness and summative examination performance. Nevertheless, this study indicates that further research on this topic is required to understand what impacts upon medical student study skills and confidence, and how they can be best supported to academically perform to the best of their ability.

Conclusion

The impact of preparedness and confidence relating to summative examination performance is rarely discussed within medical education. This pilot study highlights the complexity of the topic and the multitude of factors ultimately impacting on preparedness, confidence and summative examination performance. It is important for educators within undergraduate medical education to further investigate the relationships between social circumstances, preparation, study skills and summative examination performance in order to identify students who may benefit from additional mentoring and academic support.

Take Home Messages

1. Studies investigating the relationship between study skills, confidence, preparedness and summative examination performance within medical education literature is lacking.
2. This pilot study provides a snapshot of a range of social, academic and extra-curricular factors relating to examination performance at a UK medical school.
3. Whilst a small sample size at a single institution, the methodology and initial findings should serve as a platform for educators to delve deeper into this complex area.

Notes On Contributors

Dr Grafton-Clarke is an academic FY1 doctor in the East Midlands and Honorary Fellow at the University of Leicester.

Dr Jayne Garner is a Senior Lecturer at Edge Hill University in the Faculty of Health & Social Care.

Acknowledgements

Nil to declare.

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**Appendices**

None.

**Declarations**

*The author has declared that there are no conflicts of interest.*

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**Ethics Statement**

This study received ethics approval from the University of Liverpool under Reference 2929.
External Funding

This paper has not had any External Funding

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