Factors that impact on medical student wellbeing - Perspectives of risks

Individual Support Programme
School of Medicine
Cardiff University

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Dr Debbie Cohen
Sarah Winstanley
Paula Palmer
Joanna Allen
Sophie Howells
Giles Greene
Dr Melody Rhydderch

Individual Support Programme &
Centre for Psychosocial & Disability Research

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1.0 EXECUTIVE SUMMARY

Wellbeing is known to have a major impact on health and performance amongst medical students internationally. This study set out to understand in more depth medical students' perspectives of the factors that impact on their wellbeing during training. The Individual Support Programme (ISP) at Cardiff University was established in 2001 and sits within the Centre for Psychosocial and Disability Research, School of Medicine. As well as providing a support service for medical students and doctors, the ISP has a proven track record of undertaking research into the relationship between performance, health and wellbeing.

This study was developed to look at medical students' perspectives on risk factors that impact on their health and wellbeing during training. The objective was to develop a formative tool for UK medical schools that could be used as a basis for enhancing student wellbeing using quality improvement principles. In summary, these principles suggest the importance of non-judgment, respecting different starting points and encouraging each school to take one step in the right direction with the aim being to continuously improve its processes to proactively support student wellbeing.

This was a mixed method study. A questionnaire was designed in collaboration with medical students at Cardiff University, and consisted of 47 items based on an occupational health risk assessment model known as the DETTOL model. D.E.T.T.O.L. is an acronym that represents the known major work related risk factors: demands, environment, timing, travel, organisational and layout (Cohen, Khan and Sparrow, 2012).

Questionnaires were distributed across six UK medical schools. Focus groups were also conducted across 4 medical schools to strengthen and support the findings. The aim of the qualitative analysis was to triangulate the findings from the questionnaire data. Feedback reports were provided to the participating medical schools and an evaluation of the impact of the feedback was conducted using a simple evaluation questionnaire and by seeking views via telephone interviews.

2,735 questionnaire responses were received, equating to approximately 6.7% of the total UK medical school population. Analysis confirmed that this was a representative sample.

The questionnaire was analysed across eight 'domains' that together encompassed the various aspects of studying medicine: work-life balance, safety, culture, acquisition of knowledge and skills, perceived support for academic issues, perceived support for health/personal reasons, demands of the course, and travel and orientation.

Analysis explored from a student's perspective how well the medical schools functioned across the eight domains. It examined how these impacted on the outcome measure, which in this study was student wellbeing. The results showed that all of the medical schools that participated in this study function very well in some areas, such as facilitating the acquisition of knowledge and skills, and much less well in others, such as 'travel and orientation'. The results also suggested that the biggest gain in wellbeing could be achieved through the domain of 'culture'. Focus groups conducted alongside the questionnaire across four of the medical schools provided insight into students' views on potential solutions to the factors impacting on their wellbeing. Evaluation data from the medical schools

suggested that using the questionnaire provided a valuable addition to processes that they already had in place.

The study has allowed the development of a simple formative tool to understand how different risk factors may impact on students' wellbeing. Based on quality improvement principles it enables medical schools to review key areas of risk and provides an opportunity to learn from other schools' experiences and best practice.

2.0 BACKGROUND

2.1 The impact of medical training on students

It is recognised that training for medical students requires processes and procedures that differ from those for many other university students. The literature highlights a number of factors specific to studying medicine that may cause increased stress in students compared to the general population (Dyrbye et al., 2005). It is well recognised that medical students' workload is considerably higher than that of many other students at university. Academic pressures identified include issues such as overwhelming burden of knowledge, differing learning styles and the impact of the learning environment (Vitaliano 1988; Dunn et al., 2008; Tyssen et al., 2000; Firth–Cozens, 2001). Medical students are presented with large amounts of information to process and retain (Yiu, 2005; Holm, et al., 2010). The relentless nature of the examination system leaves little time for hobbies or interests outside medicine (Radcliffe & Lester, 2003). Performance anxiety is in itself well recognised and the objective structured clinical examination (OSCE) which is a core method of examining medical students has been identified by some as causing students significantly high levels of stress. (Radcliffe & Lester, 2003; Dyrbye et al., 2005). Many students find themselves in direct competition with their peers and friends, which may add to their stress (Radcliffe & Lester, 2003).

2.1.1 The clinical environment

Academic stress may vary across the year groups and is related to differing factors such as clinical practice versus lecture-based learning (Dahlin 2005). The types of stressors shift as students move through their training (Guthrie 1998, Dahlin 2005). As students move into the clinical years of training they frequently rotate to different hospitals and new working environments (Dyrbye et al., 2005) and often become separated from their friends. One study describes how the transition into the third year of medical training brought about many new challenges. Students described feeling 'useless' and unable to contribute to patient care. They felt they had insufficient knowledge or skills to take an active role and spent much of their time in year three 'waiting for something to happen' on the ward, rather than performing a function (Radcliffe & Lester, 2003).

Students also described their need to be seen as a competent clinician (Chew-Graham et al., 2003). Developing a professional persona, particularly during the clinical years, is frequently cited as a contributor to undergraduate stress (Radcliffe & Lester, 2003). The medical school environment presents students with ethical conflicts, exposure to death and human suffering and the need for developing quick decision making when faced with emergency situations (Mahajan, 2010; Tyssen et al., 2000). Many medical students feel inadequately prepared to communicate with dying patients and their families, leaving them feeling fearful, anxious, and hesitant of these interactions (Dyrbye et al., 2005).

2.1.2 The working environment

Clinical placements undertaken by medical students have much in common with the working environment experienced by their qualified colleagues. Work-related factors have been seen to have

an independent contribution in explaining deterioration of mental health in young doctors (Tyssen et al., 2000). This may be due to the long working hours, the learning environment and the interactions with their colleagues (Dyrbye et al., 2005). Some junior doctors face additional stress due to the poor attitudes and unethical behavior of their senior colleagues, coupled with the use of teaching by humiliation and embarrassment (Paice et al., 2002; Radcliffe & Lester, 2003). This behaviour can lead to confusion, distress, and anger in young doctors (Paice et al., 2002). Many students may find observing this behaviour towards their junior doctor colleagues and themselves as students distressing. However it has been reported that inappropriate behavior towards them decreases by the final year as they begin to behave more like doctors than students and are accepted more by senior doctors into the medical profession (Radcliffe & Lester, 2003).

2.1.3 Transitions

Periods of transition can be particularly hard for medical students (Niemi & Vainioaki, 2006). Much of the relevant literature suggests that doctors and medical students are 'under-prepared' for transitions (Kilminster et al., 2011). The transition from school to medical school can be particularly stressful due to the changes in teaching styles and the adjustment to competing with people of similar or greater intellectual ability (Dunn et al., 2008; Radcliffe & Lester, 2003). In addition, students have to cope with other changes at this time including leaving home for the first time, making new friends and experiencing new freedoms (Radcliffe & Lester, 2003).

2.1.4 Personal stressors

Medical students can feel isolated from other non-medical students due to the significant differences in their training, including the long hours, the length of the course and the nature of the work (Radcliffe & Lester, 2003). This is compounded by the need for students to travel and spend time away from home, which can impact on social and personal activities and relationships (Yiu, 2005; Holm et al., 2010). This lack of continuity can leave some students feeling vulnerable and anonymous; this is particularly felt by those who neither excel nor fail, feeling like they are unnoticed somewhere in the middle (Radcliffe & Lester, 2003).

Medical students will also experience many personal life stressors common to others in their age group (Dyrbye et al., 2005). Students may face illness, bereavement, injury of themselves or family members as well as dealing with personal relationships and in some cases pregnancy and child-rearing. Children add a level of complexity to students' lives and may affect female students' health; in one study of second-year medical students, female students were more likely to be depressed if they had children, whereas no such relationship was observed among their male parent colleagues (Dyrbye et al., 2005). Even after adjusting for children and work hours, females show higher levels of stress related to the work-home interface than males (Tyssen at al, 2013).

Many medical students suffer financial hardship. Travel to and from placements expected of students, coupled with demands such as text books, appropriate clothing and medical equipment have a financial implication for students. The length of the medical course, the long academic year and lack of regular free time that would allow students to supplement their training with outside work adds to significant financial debt (BMA, 2010; Dyrbye et al., 2005). The BMA calculates that

students who began their degree in 2006 can expect to graduate with debt of up to £37,000 (£46,000 in London) (BMA, 2010).

2.1.5 Managing health

Many studies describe mental ill health and stress related ill health in medical students. Medical students display high levels of depression and anxiety (Nieme & Vainioaki, 2006). The prevalence of depression and anxiety disorders are described by some as being significantly higher in both doctors and medical students than in the general population (Schneider, 1993; Firth-Cozens, 1987; Kash, 2000; Bellini, 2002). However more recent longitudinal studies suggest that although depression is present the prevalence may not be as high as reported previously (Quince et al., 2012). Whilst many health issues arise independently, other health issues, particularly mental health issues, for medical students are as a direct result of trying to cope with difficult personal, social or learning environment related factors during their studies (Cohen et al., 2012). A further factor is that medical students, like doctors, are particularly poor at managing their own health (Hooper et al., 2005). There are many reasons why students avoid seeking appropriate help, including concerns over confidentiality, fear of stigma and the concern it may impact on career progression (Chew-Graham et al., 2003; Fox et al, 2011). Students and doctors tend to manage their own health through ad hoc corridor consultations, self-medication and personally initiating investigations, referrals or treatment (Fox et al, 2011; Hooper et al., 2005). Medical students also fail to use health services; in one study it was estimated that less than a quarter of first and second year medical students who were depressed were using mental health services (Givens & Tjia, 2002).

2.1.6 Culture

Culture has been defined as “a pattern of shared basic assumptions that a group or organisation learn as it solves its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems” (Schein, 1992).

Organisational culture is a powerful driver of the behaviour of individuals who exist within it. It has both positive and negative aspects. On the positive side, a strong culture where people know how they should interpret situations and react, particularly in a high risk environment like healthcare, is important. On the negative side, one of the most powerful aspects of culture are the unspoken rules, which often exert a stronger influence over student behaviour than other aspects of organisation, such as its espoused values. In the medical education literature, the unspoken rules are often described as the ‘*hidden curriculum’*.

One particularly influential unspoken rule regards how students behave in a learning culture where illness demonstrates weakness and doctors should be strong (Fox et al., 2011). Working arrangements such as being pressurised not to miss shifts reinforce the culture in which distress is overlooked and seeking help discouraged, (Fox et al., 2011). This in turn fosters presenteeism. Presenteeism is defined as being in work when unwell and is well recognised as a major contributor to performance issues across all health and social care professionals. Hull and colleagues (2008) report how doctors often cite workload, stigma and fear of harming future career prospects, as reasons for

remaining in work when unwell. The financial impact of presenteeism is well recognised where within the NHS presenteeism costs health care organisations more than sickness absence (Boorman, 2009).

2.2 Wellbeing

There is no consensus around a single definition of wellbeing, but there is general agreement that as a minimum, wellbeing includes the presence of positive emotions and moods (e.g. contentment, happiness), the absence of negative emotions (e.g. depression, anxiety), satisfaction with life, fulfillment and positive functioning.

The Foresight Mental Capital and Wellbeing Project (2008) describes wellbeing as "a dynamic state in which the individual is able to develop their potential, work productively and creatively, build strong and positive relationships with others and contribute to their community. It is enhanced when an individual is able to fulfill their personal and social goals and achieve a sense of purpose in society". Thus, wellbeing is more than the avoidance of ill health; it is about the nurturing of positive attitudes and decisions about lifestyle and social interactions. Wellbeing is based on the broader construct of the biopsychosocial model, which recognises the important interplay between all three of these areas.

Wellbeing in the workplace or an educational environment therefore requires a culture that actively assists individuals to fulfil their own potential rather than just promote reactive management of ill health or adverse situations. It requires an environment that supports physical, mental, social and spiritual development and understanding. It is more than ensuring a culture that limits harm to individuals; wellbeing is the promotion of a corporate responsibility to positive attitudes to work, lifestyle and social interactions both within and outside the working environment. It is partnership between the individual and the organisation and requires meaningful dialogue and a flexible response to need.

Organisational wellbeing is a broad term but in essence engenders meaningful and productive activities in a safe and healthy environment. To achieve this requires a value based working environment, that allows for open dialogue and discussion where individuals feel listened to, clarity of purpose and structures, and good team working.

Employee wellbeing is about good working relationships with team members and line managers or supervisors. It includes recognising the importance of good physical and mental health balanced with motivation and clarity of goals, self respect and resilience and a network of support and development that is flexible to employees varying needs.

In the context of medical training, it is the balance between the medical school educational and clinical demands and the medical students response to learning alongside a healthy lifestyle and social interaction that are central to wellbeing (Cohen & Rhydderch, 2013) and that requires further exploration.

2.3 Models

This project was based on well-recognised models of risk validated for use in organisational contexts.

2.3.1 Models of risk

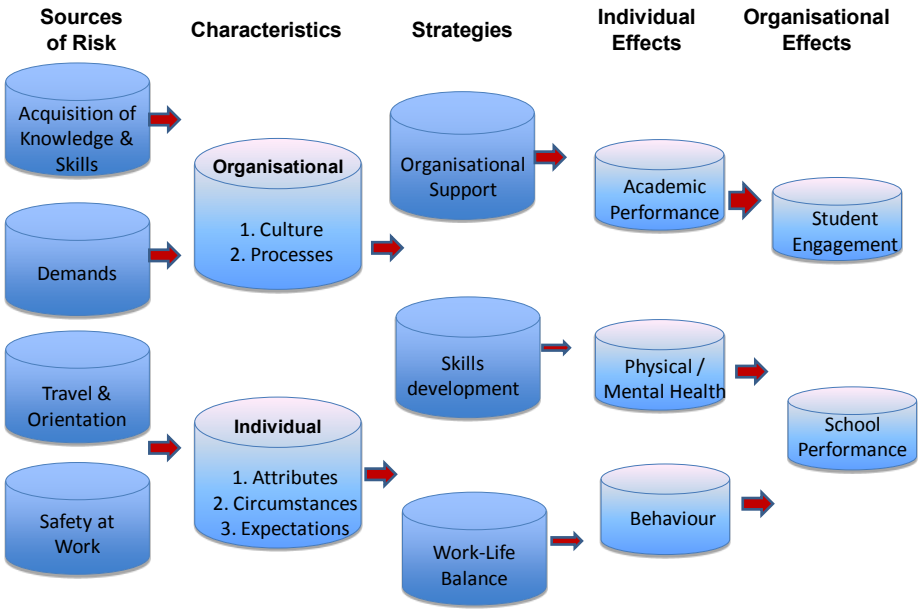
The model of risk D.E.T.T.O.L. was developed through collaboration with Professor Sayeed Khan and Dr Debbie Cohen at Cardiff University. The model developed methods for GPs and secondary care doctors to undertake simple risk assessments of their patients' health in relation to their work. The D.E.T.T.O.L. model of risk assessment is detailed in Figure 1 below where each of the six letters in the acronym represents an area of potential risk.

Figure 1: D.E.T.T.O.L. model (Cohen, Khan, Allen & Sparrow, 2012)

- **D**emands: physical, intellectual
- **E**nvironment: wards, lectures, (e.g. dusts, chemicals, size of rooms)
- **T**iming: shift work, early start, long hours
- **T**ravel: between sites, long distances, lone travel
- **O**rganisational: timetables, teaching, support
- **L**ayout: ergonomics, work equipment

Further 'dynamic' models from occupational psychology were also employed to further understand risk and effects of risk on a student population. Figure 2 below illustrates the dynamic model of risk developed, adapted from the Occupational Stress Indicator (Cooper, 1988).

Figure 2: Dynamic Model of Risk



The Occupational Stress Indicator is based on the idea that stressors do not influence everyone in the same way. That view is applied in this current study on perceptions of risk. Therefore, the importance of medical students' perceptions along with their interpretations of the learning environment, the process of cognitive appraisal and the effect of personality characteristics and demographic factors is emphasised. The OSI model argues that work pressures lead to negative outcomes (lowered job satisfaction and mental and physical health) and that this relationship may be moderated by individual variables.

In this study, it is argued that perceptions of risk are moderated by individual characteristics such as personality and background health, as well as organisational characteristics such as processes in place to support student wellbeing. In addition, sources of risk are moderated by strategies used by students in their day-to-day lives such as their approaches to revision and maintaining a healthy work-life balance. As a result, the same level of a particular risk may have a different impact on different individuals. The impacts within the model are described as individual effects and organisational effects.

3.0 AIM OF STUDY

This study was developed to look at medical students' perspectives on risk factors that impact on their health and wellbeing during training. The objective was to develop tool for UK medical schools that could be used as a basis for enhancing student wellbeing. The tool aimed to provide medical schools across the UK with a method of understanding and enhancing student support specific to their own students' needs and concerns.

4.0 METHODS

This was a phased mixed method study. Phase 1 included the development of a questionnaire to medical students at Cardiff and Leicester medical schools. In addition, focus groups were conducted with all year groups at both medical schools. Phase 2 was an extension of this study commissioned by the GMC in June 2012. The study was expanded to cover a wider group of medical schools. Imperial, Brighton, Bristol, Hull and York, and Peninsula medical schools were recruited to the study, to gain perspectives from medical schools of different sizes and styles of programme. The questionnaire was distributed to these five additional schools and further focus groups were conducted. Ethical approval was sought and approved at each medical school. Theoretical models to understand and measure wellbeing, and workplace risk and support were used to underpin the work.

4.1 Quantitative Methods – Exploring construct validity

4.1.1 Questionnaire development

The questionnaire was designed in collaboration with medical students at Cardiff University. Sophie Howells, a Cardiff medical student, undertook this work as part of her research project. It consisted of 47 items based on the risk assessment model D.E.T.T.O.L. The questionnaire was then tested for face and content validity through a pilot and cognitive debriefing with a group of 10 medical students. Debriefing involved recording whether or not each of the items was reported to be problematic in terms of the comprehension of the concept, the wording of the question, or the response options. The response selected was recorded along with any suggestions for improvements made by the respondents, such as a more appropriate vocabulary.

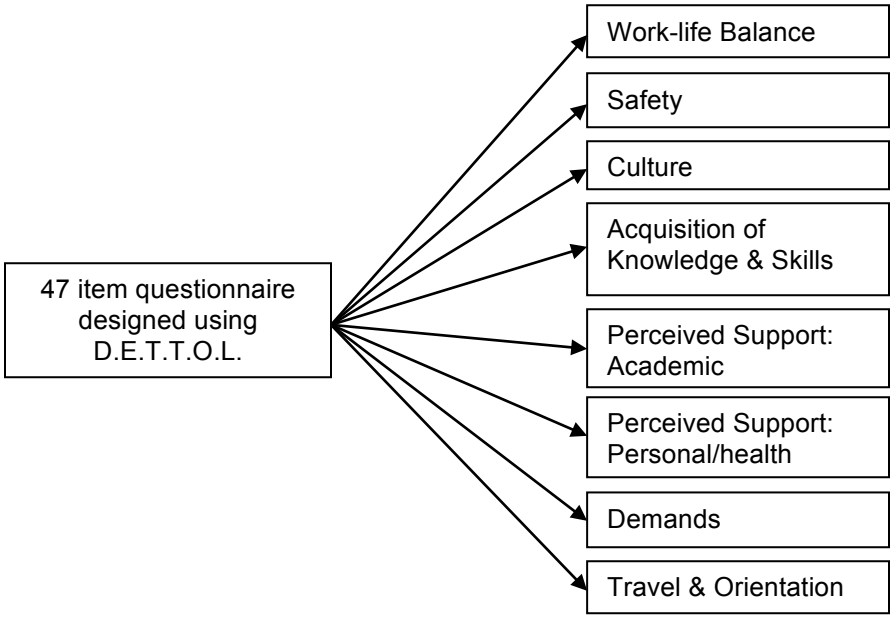
The research team reviewed the responses and concerns that arose during the debriefing process and potential solutions were recommended. The questionnaire was then further reviewed to confirm appropriate changes had been made. A copy of the questionnaire is available in the appendix 8.1. The information sheet and consent form for the use of the questionnaire is contained in 8.2.

Three versions of the introduction and description of the questionnaire were created to respond to the varying ethical requirements at each medical school. All items and demographic questions in the questionnaire were identical.

4.1.2 Outcome measures

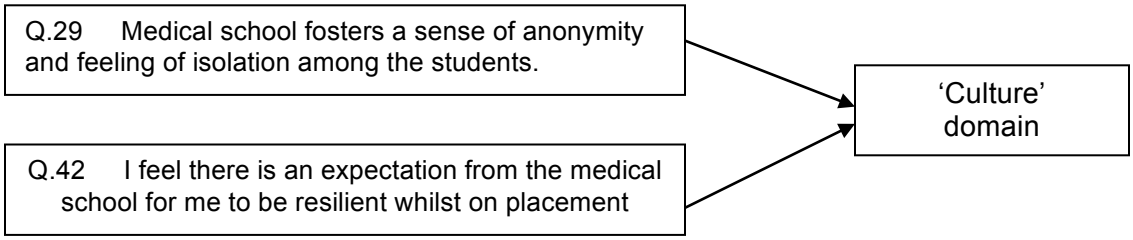
Following completion of the questionnaire the 47 items were further analysed and restructured into 8 'domains'. This is shown in Figure 3 below. The items corresponding to each domain are detailed in appendix 8.2.

Figure 3: Questionnaire Domains



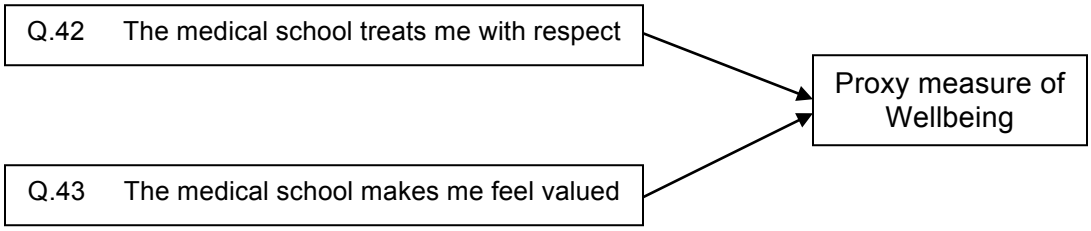
As outlined previously, organisational culture is a powerful driver of behaviour. A positive organisational culture is deemed to be inclusive and supportive and have a strong positive impact on the individuals within it. Therefore, for the purpose of this report, the domain of 'culture' focuses on two questionnaire items. Firstly, question 29 which relates to isolation, i.e. a sense of feeling excluded and secondly, question 42 which relates to the student expectations of the need to be resilient.

Figure 4: Questionnaire Domain of Culture



As well as constructing domains, a proxy outcome measure of wellbeing was chosen. This was a composite of two questionnaire items that focused on 'feeling respected' and 'valued'.

Figure 5: Questionnaire Proxy Outcome Measure of Wellbeing



The definition of wellbeing as described previously in this report is wide ranging. However, we were constrained by the need to design a brief questionnaire (constructed using the DETTOL concept) to minimize the data burden collection upon medical students. We therefore chose to focus our proxy measure of wellbeing on two items: value and respect. We chose these two constructs, as they are considered fundamental by the theories of Maslow (1970), Deci and Ryan (2000), and Ryff and Keyes (1995).

The medical school makes me feel valued: A recent survey conducted by the American Psychological Association (APA, 2012) found that feeling valued at work is linked both to performance and wellbeing.

The medical school treats me with respect: Tay and Deiner (2011) found that respect was one of the core indicators of subjective wellbeing.

4.1.3 Data collection

The questionnaires were made available to access through the online survey software 'Bristol Online Survey' (BOS). The method of disseminating the link to the relevant survey differed slightly between medical schools to comply with their ethical requirements. This included: the virtual notice board 'Blackboard', emails direct from medical school staff, and links placed in student newsletters. Reminders went out approximately two weeks later, with a third and final reminder targeting medical schools with low response rates a week after that.

Paper copies of the questionnaire were also distributed. The exact nature of the distribution varied between medical schools, with some schools allowing researchers access to lectures (collecting questionnaires in break times) and others encouraging their own staff to distribute the questionnaires in tutorials. Students were requested to only complete one format of the questionnaire.

4.1.4 Data validity checks

Paper responses were input in to BOS manually by a member of the research team.

The data from the paper questionnaires entered manually were subject to the following checks: 10%

of questionnaires entered were checked, and if an error was found, 100% of the field containing the error was subsequently checked.

4.1.5 Quantitative data analysis

A descriptive analysis was undertaken to explore the response rates to the questionnaire. The demographics associated with the respondents to the questionnaire broken down by medical school were also explored. Both of these analyses were conducted to assess the generalisability of the results.

The remainder of the quantitative data analysis was designed to address issues related to the construct validity of the questionnaire. Construct validity refers to the degree to which inferences can legitimately be made from the operationalisations in a study to the theoretical constructs on which those operationalisations were based. Each of the eight domains can be considered as separate conceptual constructs that together make up the overarching construct known as 'risk factor domain'. Although demonstrating construct validity is an ongoing process, the analyses described below allowed for an initial exploration of how each risk factor domain is influenced by variables such as medical school, year group and type of course. Exploring the influence of the domains on wellbeing provides an opportunity to explore the arguments highlighted in the introduction that risk factors have the potential to positively and negatively impact on medical student wellbeing.

The quantitative data was therefore analysed as follows:

1. An initial overview analysis was undertaken by calculating raw mean scores and related f scores for each of the risk factor domains broken down by medical school.
2. Following a rescaling of the raw scores to produce 1-5 mean values, a regression analysis was undertaken for all year groups as well as for style of course (Problem based learning and traditional).
3. A comparison of medical schools on each of the risk factor domains was undertaken by calculating median scores.
4. Finally, multilevel modeling was undertaken to analyse risk factors and their relationship to wellbeing. The impact of improving a score (1-5) by 1 on each risk factor domain on wellbeing was calculated.

4.2 Qualitative methods: Exploring content validity

To explore content validity of the questionnaire, a qualitative approach to understanding how risk factors potentially impact upon wellbeing was undertaken. This was felt to be fundamental to achieving a better understanding of students' perceptions of risk and how they may impact upon their wellbeing. The aim of the qualitative analysis was to triangulate the findings from the questionnaire data.

4.2.1 Recruitment

Focus groups were conducted with each year group at Cardiff and Leicester medical schools in Phase 1. We also aimed to purposefully select a year group from each of the five additional medical schools, but due to poor weather and exams, we were unable to recruit at all 5 schools. We did complete focus groups at each of Brighton and Bristol medical schools in Phase 2. However, no new themes emerged and so we did not pursue any additional focus group data. Students were recruited by sending out recruitment emails targeting specific year groups, and displaying posters at each medical school. Places were allocated on a first-come first-served basis. Incentives (a voucher, memory stick and lunch) were offered to those volunteering to take part.

4.2.2 Group structure

An average of 12 students per group took part in a total of 12 focus groups. The nominal group technique (Gallagher, 1993) was employed to enhance engagement. This approach combines quantitative and qualitative data collection in a group setting and allows the researchers to overcome some of the problems inherent in running focus groups where participants may encounter concerns around hierarchy.

The focus groups lasted 50 minutes each over lunchtime slots. They were audio recorded and field notes were taken. The focus group tasks included stating the top 5 'demands' of being a medical student, and solutions for key challenges. These solutions were collated into a matrix contained in appendix 8.4.

Participants remained anonymous. The flip charts and other materials to aid the ranking process and discussion data collected from the focus groups was later analysed alongside the audio recordings.

4.2.3 Qualitative data analysis

The focus group data from phase 1 and 2 along with the 250 open comments from the survey were analysed thematically using framework analysis (Smith & Firth, 2011). Initial analysis identified and described themes, beginning with initial reading and re-reading of a selection of transcripts by two members of the research team. These were discussed and codes identified to provide the basis of a coding framework. Data was then systematically coded with two members of the research team independently coding a sample of transcripts. Discrepancies were checked, discussed and clarified. Data was stored and coded using NVivo. Following an initial thematic analysis, further in depth analysis was conducted using an iterative process and drawing upon relevant theory where appropriate (Kelly, 2010).

4.2.4 Integrating the quantitative and qualitative data

Finally a comparison of the quantitative and qualitative data was undertaken with each being interrogated from the perspective of the other.

4.3 Evaluation data – Exploring face validity

Following the data collection and analysis phase, reports were produced for each medical school (see appendix 8.5). The medical schools were then asked to complete an evaluation questionnaire to elicit feedback on the usefulness and utility of the questionnaire and accompanying feedback report as a intervention to prompt quality improvement in the area of student wellbeing using the risk factor model (appendix 8.6). Finally, telephone interviews were arranged with stakeholders in a subset of the medical schools to follow up any issues arising from the questionnaire.

5.0 RESULTS

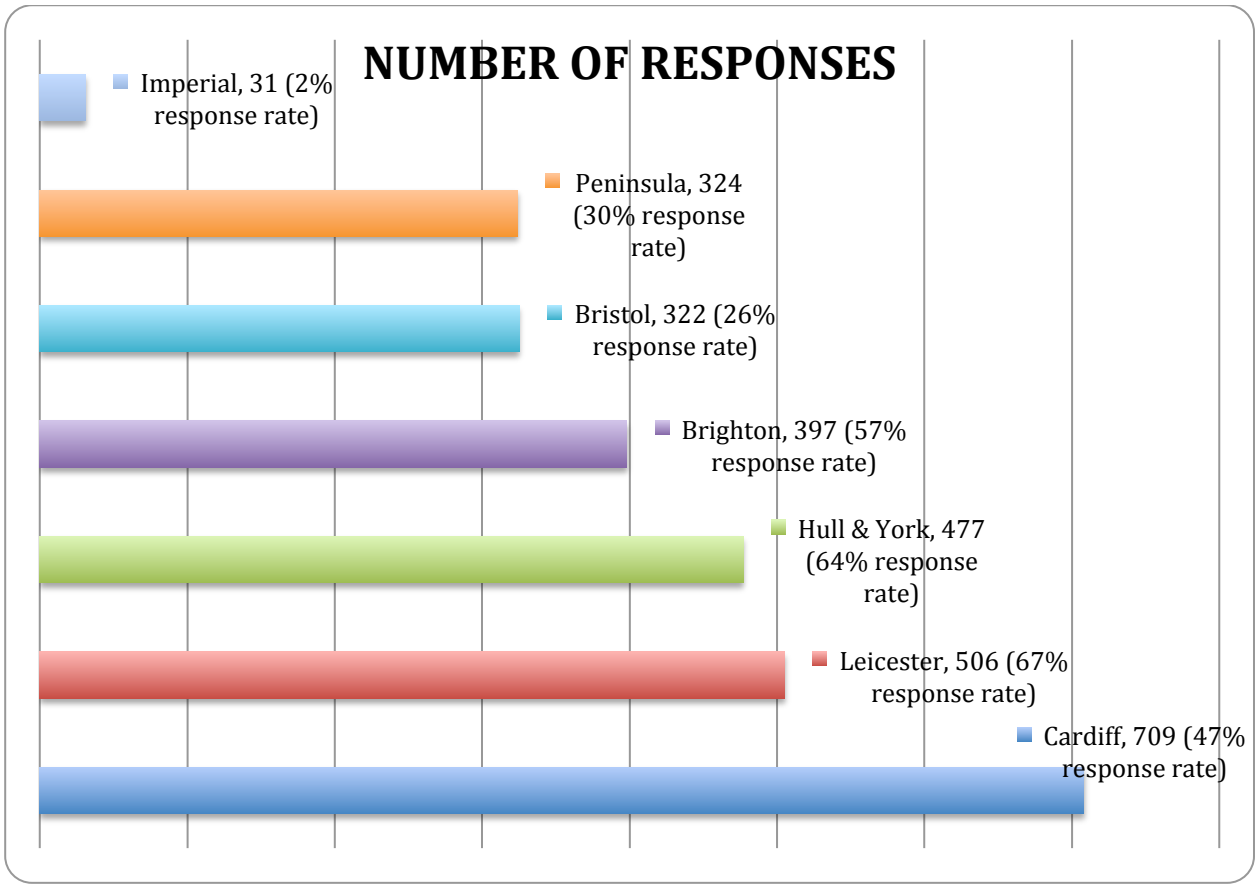
5.1 Quantitative results

5.1.1 Descriptive analysis

Response rates

2,766 responses were received, giving an overall response rate of 42%. The response rate from Imperial College was only 2%, therefore as the sample was likely not to be representative, the Imperial College sample was removed from further analyses. The remaining sample of 2,735 equates to approximately 6.7% of the total UK medical school population and a 48% response rate.

Figure 6: Questionnaire Response Rates



Demographics

Table 1 provides the demographic profile of the questionnaire sample. Comparison to GMC data on the present UK medical student population suggested that a representative sample had been collected.

Table 1: Demographic Profile of Questionnaire Sample

School (N=2,735)	**N (%)**		**Year of study (N=2,725)**	**N (%)**
1	397 (14.52)		1	755 (27.71)
2	322 (11.77)		2	572 (20.99)
3	709 (25.92)		3	527 (19.34)
4	477 (17.44)		4	470 (17.25)
5	506 (18.50)		5	401 (14.72)
6	324 (11.85)			
Gender (N=2,734)			**First degree (N=2,735)**	
Female	1,751 (64.05)		No	541 (19.78)
Male	983 (35.95)		Yes	2,194 (80.22)
Age (N=2,733)			**Ethnicity (N=2,729)**	
18-21	1,560 (57.08)		White	2,014 (73.80)
22-25	896 (32.78)		Black	75 (2.75)
26+	277 (10.14)		Asian	401 (14.69)
Marital status (N=2,735)			Mixed	84 (3.08)
Single	2,449 (89.54)		Chinese	64 (2.35)
Married	255 (9.32)		Other	91 (3.33)
Rather not say	31 (1.13)			
Children (N=2,734)			**Religion (N=2,719)**	
No	2,690 (98.39)		Christian	1,126 (41.41)
Yes	44 (1.61)		None	1,076 (39.57)
First language English (N=2,734)			Other	442 (16.26)
No	338 (12.36)			
Yes	2,396 (87.64)			

5.1.2 Raw scores

Table 2 shows the raw mean scores for each of the domains and the related f scores. The raw scores are domain specific, due to the fact that each domain had differing numbers of questionnaire items contributing to it. Therefore a comparison of raw scores across the 8 domains is not possible. However, the raw score enables the reader to view how medical school responses differed descriptively within each domain. For example, whilst medical school C achieved a raw score of 11.57 on the domain known as travel and orientation, medical school D achieved a raw score of 21.21 on the same domain.

However, it is possible to make one comparison across the domains using the f score. The f score is generated from a one way ANOVA, a technique used to compare means of two or more samples. The f score allows comparison of variability *across the* domains. The f score relates to the differences in variation of scores of the different samples within a domain with a higher score representing a greater degree of difference or variation.

The f scores in this analysis are all highly significant apart from the 'demands' domain, which is still significant. However this result does reflects to some extent the large population sampled.

It should be noted at this point that the raw scores are not controlled for size of the medical school, gender etc; if these are controlled for, the f score still remains significant or very significant, but at about half the value shown in Table 2.

Table 2: Raw mean (SD) scores for each domain from each school. F from univariate one-way ANOVA

	Acquisition of Knowledge & Skills	Work-life Balance	Demands	Travel & Orientation	Safety	Culture	Perceived Support: Academic	Perceived Support: Personal/ health
F score	**64.95*** **	**24.00*** **	**72.99** **	**126.25*** **	**114.67*** **	**62.20*** **	**36.13*** **	**26.12*** **
A	22.75 (4.38)	11.07 (3.55)	34.66 (6.01)	19.10 (5.76)	18.28 (5.04)	14.12 (2.86)	11.32 (2.15)	17.64 (5.11)
B	19.18 (6.85)	10.65 (3.75)	30.46 (8.35)	11.22 10.03)	14.82 (6.56)	12.19 (2.92)	9.60 (3.20)	14.98 (5.90)
C	19.58 (6.36)	10.75 (3.58)	30.99 (7.33)	11.57 (9.39)	14.00 (5.48)	11.79 (2.93)	9.89 (2.80)	14.68 (5.43)
D	24.58 (4.23)	11.52 (3.52)	36.72 (5.97)	21.21 (5.58)	20.86 (4.17)	13.31 (2.90)	11.19 (2.33)	17.32 (5.57)
E	21.35 (5.15)	9.14 (3.27)	29.53 (7.03)	11.48 (10.05)	16.27 (5.95)	11.05 (3.18)	10.42 (2.87)	14.48 (5.56)
F	23.94 (5.27)	10.94 (3.51)	34.03 (6.45)	18.43 (5.67)	19.83 (5.07)	12.92 (3.02)	11.55 (2.25)	15.91 (5.58)
Total	**21.71 (5.85)**	**10.64 (3.60)**	**32.55 (7.37)**	**15.10 (9.22)**	**17.02 (5.99)**	**12.44 (3.14)**	**10.59 (2.73)**	**15.71 (5.65)**

***=p<0.001, **=p<0.01

5.1.3 Regression models

Scores for all domains were rescaled to facilitate comparisons across domains. Some questions were phrased positively and others negatively, so all questions were recoded and rescaled, to produce 1-5 mean values, where 1 was a low score and 5 a high score. An average score was calculated for each domain. Our proxy measure of wellbeing was also rescaled, where 1 was again a low score and 5 a high score e.g. a high score in the domain of 'safety' means students have no concerns about safety during their training. This is shown in figure 7 overleaf.

Figure 7: Rescaled Domain Scores Interpretation

Domain	Score of 1	Score of 5
Knowledge	High concern about knowledge and skills acquisition	No concern about knowledge and skills acquisition
Work life balance	Belief that work life balance is very poor	Belief that has good work life balance
Demands	Feeling that unable to cope with demands of the course	Able to cope well with the demands of the course
Travel	High concern about travel	No concern about travel
Safety	High concern about safety during their training	No concerns about safety during their training
Culture	Poor culture no support	Good supportive culture
Academic support	Feeling that not supported	Feeling well supported
Personal support	Feeling that not supported	Feeling well supported

Table 3 shows that on comparison of mean domain scores stratified for all year groups the variance (f value) within most domains was highly significant except for the domain of 'perceived support for academic issues', which was significant and the domain of perceived support for personal/health issues where there was no significant difference across year groups. The greatest variance lay within the domain of travel and orientation (f=229.13***). On comparison of the averaged mean scores within each domain the lowest averaged mean score was first for the domain of 'travel & orientation' (2.16), second for perceived support for personal/ health issues (2.62) and third for work life balance (2.67).

Table 3: Mean rescaled domain scores stratified for year groups

Rescaled mean scores (SD) for the domains stratified by year of study, and f scores (socio-demographically controlled, multivariate, ANOVA), ***=p<0.001, **=p<0.01

	Acquisition of Knowledge & Skills	Work life balance	Demands	Travel & orientation	Safety	Culture	Perceived Support: Academic	Perceived Support: Personal/ health
Year of study								
1	2.12 (1.75)	2.59 (0.88)	2.59 (0.73)	1.01 (1.3)	1.99 (0.94)	3.65 (0.67)	3.33 (1.03)	2.59 (0.96)
2	3.35 (1.01)	2.77 (0.92)	3.04 (0.66)	2.05 (1.21)	2.71 (0.86)	3.38 (0.79)	3.64 (0.82)	2.69 (0.96)
3	2.12 (1.75)	2.66 (0.87)	3.11 (0.53)	2.60 (0.98)	3.34 (0.71)	3.10 (0.77)	3.58 (0.85)	2.60 (0.94)
4	3.90 (0.71)	2.69 (0.86)	3.19 (0.50)	2.97 (0.67)	3.43 (0.64)	3.08 (0.84)	3.67 (0.78)	2.63 (0.90)
5	3.90 (0.75)	2.69 (0.91)	3.12 (0.53)	2.97 (0.73)	3.33 (0.65)	2.94 (0.78)	3.55 (0.87)	2.60 (0.91)
Average	**3.26 (1.37)**	**2.67 (0.89)**	**2.97 (0.66)**	**2.16 (1.32)**	**2.85 (0.99)**	**3.29 (0.81)**	**3.54 (0.90)**	**2.62 (0.94)**
f	**148.11*** **	**5.41*** **	**59.23*** **	**229.13*** **	**217.46*** **	**57.26*** **	**3.76 ** **	**1.51**

Medical students in different year groups varied in the way they rated each domain (as reported by the year mean scores) except perceived support, which showed very little variation across the year groups. Each year group rated support for personal and health issues as low, where no year group reported their perception of support for personal issues higher than 2.69. Interestingly, the mean scores for 'perceived academic support' were some of the highest in this table and this is reflected in the highest mean score of 3.54.

Of interest is that there is an increasingly positive perception of support across all domains as the years progressed except for culture where the direction of support was reversed.

Inferences from this data with regard to temporal trends must however be treated with caution. Data reported shows cross sectional associations only. Thus although the data may be suggestive of a temporal trend, e.g. that perceived support increases as they pass through medical school, a causal relationship cannot be inferred.

Table 4: Mean rescaled domain scores stratified for style of course

Rescaled mean scores (SD) for the domains stratified by teaching style (Problem Based Learning versus traditional) and f scores (socio-demographically controlled, multivariate, ANOVA), ***=p<0.001, **=p<0.01.

	Acquisition of Knowledge & Skills	Work life balance	Demands	Travel & orientation	Safety	Culture	Perceived Support: Academic	Perceived Support: Personal/ health
Style of course								
PBL	3.76 (1.00)	2.76 (0.86)	3.12 (0.55)	2.64 (0.81)	3.34 (0.81)	3.18 (0.99)	3.87 (0.73)	2.66 (0.92)
Traditional	2.92 (1.58)	2.56 (0.89)	2.78 (0.67)	1.65 (1.44)	2.50 (0.98)	2.91 (1.01)	3.35 (0.97)	2.45 (0.93_
Average	**3.06 (1.52)**	**2.60 (0.89)**	**2.84 (0.66)**	**1.82 (1.36)**	**2.64 (1.01)**	**2.95 (1.01)**	**3.44 (0.95)**	**2.49 (0.93)**
F	**13.07*** **	**46.23*** **	**78.40*** **	**114.47*** **	**86.86*** **	**43.61*** **	**35.67*** **	**17.74*** **

Table 4 shows a comparison of the rescaled mean scores stratified for style of course. Here the variance (f Score) demonstrates highly significant variance within each domain.

The mean scores differ across every domain with scores in PBL being higher in than traditional style of training. The trends remain the same as in the table 3 as the data is the same. However, further inferences cannot be made from this dataset as with only one school using PBL these data are not representative.

5.1.4 Wellbeing correlations

The next stage of the quantitative analysis was to explore the relationship between each of the eight domains, and our proxy measure of wellbeing. The following multilevel (mixed effects) regression was undertaken on the rescaled scores. It was assumed that the data was parametric, that is to say

the 8 domains and wellbeing values were interval values. This means that they change in a similar rate between the points and that their overall relationship was assumed to be linear.

Model estimates were undertaken for each of the domains (Table 5 below) and regressed the effect of each domain upon wellbeing, controlling for all the socio-demographic factors in Table 1.

Table 5: ML Model estimates (95% CI) for each domain controlled from socio-demographic factors on 5-point scale

	Estimate	SD of school-level variance
Acquisition of Knowledge & Skills	0.204 (0.144-0.262)***	0.295
Work-life Balance	0.211 (0.170-0.253)***	0.292
Demands	0.363 (0.301-0.425)***	0.265
Travel & Orientation	0.094 (0.056-0.132)***	0.279
Safety	0.165 (0.115-0.215)***	0.284
Culture	1.034 (1.003-1.066)***	0.117
Perceived Support: Academic	0.332 (0.290-0.372)***	0.261
Perceived Support: Personal/health	0.318 (0.280-3.564)***	0.250

The estimates described the level of change to wellbeing, (on a 5-point scale) that a one point change (also on a 5-point scale) in each domain would produce. For example, a one point change in the median value of the 'demands' domain would bring about a 0.3 (one third) of a point increase in the value of wellbeing.

Table 5 illustrate the model estimates. Improvements in most of the domains are associated with similar levels of change in wellbeing, apart from 'travel & orientation', and 'culture'. The model estimates indicate that the domain of 'culture' has the biggest effect on wellbeing where a one point change in median value in the domain of culture would bring about a one point increase in the value of wellbeing. This equates to a 20% change (using a 5 point scale) in wellbeing.

It would appear that a one point change in the median value of 'travel & orientation' makes relatively little difference upon the proxy measure of wellbeing.

5.1.5 School comparisons and development of the tool

The next stage in the analysis was to use the questionnaire to inform the development of a simple tool. The aim was to develop a tool that would allow for comparison across schools anonymously. This would help schools calibrate their activity and scores with other UK medical schools.

Table 6 illustrates the tool developed using median scores across all schools. This allows a more general comparison of results across schools. It provided each school with an overview of how they

performed and areas in which they could consider improvement. The rescaled scores can be interpreted as follows as follows: 1-2 = Poor, 3-4 = Good, and 5 = Excellent.

Table 6: The median score for each school and the total for each of the domains.

	Acquisition of Knowledge & Skills	Work-life Balance	Demands	Travel & Orientation	Safety	Culture	Perceived Support: Academic	Perceived Support: Personal/health
A	4	3	3	3	3	4	4	3
B	3	2	3	1	2	3	4	3
C	3	2	3	2	2	3	4	3
D	4	3	4	3	4	3	4	3
E	4	2	3	1	3	3	4	3
F	4	2	3	2	4	3	4	3
Total	4	2	3	2	3	3	4	3

Table 6 shows that overall each school tends to perform similarly in each of the 8 domains. Of interest is that all schools seem to function very well at some things and are rather poorly at others. It appears that all schools facilitate the acquisition of knowledge and skills, and provide support in relation to academic issues to a higher level than they achieve in other domains. Reinforcing the analyses conducted in previous sections, the variability for the travel and orientation can be seen descriptively in the above table.

5.2 Qualitative results

5.2.1 Focus group findings

The focus groups highlighted five areas that were of importance to medical students. These were:

- Finance
- Non-academic demands of medical training
- Academic pressures
- Work-life balance
- Health

It is noted here that finance was found to be a significant area of concern highlighted by students, something not identified by the questionnaire.

Figure 8 overleaf shows some examples of quotes that reflect each of these areas.

Figure 8: Quotes from Focus Groups

Finance

- *"You have the added cost of buying clothes for placement, as well as books and stethoscope. You spend a lot of money in the first year on books alone"*
- "*The costs incurred for travelling can cause extra debt*"
- "*The terms are longer than other courses; however the student loan amount is exactly the same. Medical students have an extra 13 weeks of term compared to other courses"*

Non academic-demands

- *"The highly competitive environment is worrying and reiterated constantly"*
- "*There's unnecessary pressure on professionalism*"
- "*Often the consultants are unclear on what level of knowledge they should expect from year 4 students"*
- "*It's difficult to predict working hours so I'm unable to organise anything*"

Academic Pressures

- *"Too many exams to revise for in too little time."*
- *"They should assess us more frequently."*
- *"Too much is expected from you."*

Work-Life Balance

- "*Time pressure – there aren't enough hours in the day. A one hour lecture can lead to 4 hours work by the time you have done the reading and written up the notes"*
- "*You have to block out 8am-5pm Monday to Friday for placement which makes it difficult to arrange anything. I can't get to the bank, doctors or sort out accommodation"*

Health

- "*Not knowing what to expect is really stressful and causes a lot of anxiety"*
- "*Stress is good, it makes you resilient"*
- *"You work really long hours when on placement so feel exhausted by the end of the day. Feel too tired to do anything or go anywhere when you get home"*
- *"I don't have time to exercise"*

5.2.2 Open comment findings

On review of the free text from the open comments box on the questionnaire, it was evident that comments validated the main domains identified in the survey, and the major issues raised in the focus groups.

Of interest here was that the nature of the comments reflected in the anonymity of the questionnaire. Some comments raised here were more vociferous and a small number of quotes covered areas not disclosed at the focus groups (see Figure 9 overleaf).

Figure 9: Quotes from Open Question on Survey Questionnaire

"Can be quite hostile/lonely among medical students at times."

"I feel a bit like a statistic that is put through the system and pushed to improve the medical schools standing on a national basis, rather than being pushed to better myself and get better at my job."

"Areas where I have felt undervalued are only highlighted when undergraduate teams tell students at free lunches where there is compulsory attendance to "wait until the doctors have eaten and you can eat the leftovers". Times like this make students feel completely undervalued and not respected."

"At medical school, we are just a number. There is little or no personal tutor support, the NHS bursary scheme is a nightmare and I average over 3K in expenses for medical school, there is little recognition of extra-curricular efforts beside rugby and rowing. It's still a place for the white, male, middle and upper classes."

"I feel that the medical school aren't there for us and are out to get us sometimes."

"There have been few points during medical training thus far at which have I felt respected or valued by the medical school as an organisation other than as a source of monetary income via tuition fees."

In summary, the focus groups offered context-rich information, supporting the interpretation of the quantitative data. They highlighted five main areas of importance to medical students:

- Finance
- Non-academic demands
- Academic pressures
- Work-life balance
- Health

The focus groups also provided suggested solutions for how students can be better supported. The additional qualitative comments from the questionnaire provided further detail of areas of risk identified through the questionnaire and focus groups, and supplementary suggestions for improvements.

5.3 Feedback from Participating Medical Schools

The participating medical schools were given the opportunity to provide feedback via questionnaire and a telephone interview. The feedback was elicited to provide information about the value of participating, highlighting any difficulties and whether the information in the report highlighted areas for development. Feedback indicated that the medical schools had found it a useful exercise to participate in the study. Responses received included:

'The school was happy to take part in the study"

"This is a useful study in enabling us to consider a range of factors impacting upon students."

"*Supports some of the issues raised locally and national, therefore consistent.".*

Those that had received feedback from students participating in the study indicated that the students "*were happy to be part of this study and were pleased that research was interested in issues affecting their wellbeing*".

In terms of difficulties associated with participating, recruitment was highlighted as one area to consider. One medical school stated that there were "*the usual issues with recruiting students to fill in questionnaires*" but that they were happy with their response rate. Another said that they had had to spend "*lots of time recruiting*". One school suggested that they felt medical students were more likely to respond to questionnaires where there was the possibility of a prize. It should be pointed out that one medical school indicated that they did not experience any difficulties with recruitment.

Some of the feedback indicated that the domains highlighted in the feedback "*provided a sensible structure to review student wellbeing"* and that "*the comparative data was interesting, for example suggesting that we score highly in domains such as safety and demands. This was reassuring*".

Whilst one school had not had the opportunity to discuss whether the feedback described areas for development, another stated that whilst the survey may not have highlighted any areas for development that they weren't already aware of, the findings "*helped focus some of our energies*". They added "*it was helpful to see concerns about work-life balance appearing – not something we do well in general in medical schools*". One other medical school focused on the work life balance domain as being something that they wished to explore further along with culture and health support. Finally feedback and student support were highlighted as issues that one medical school had said they were previously not aware of.

In terms of the feedback report's role in reinforcing knowledge about issues that potentially impact student wellbeing, two medical schools indicated that they were already aware of issues associated with travel and one of those schools said that they were taking steps to improve students' experiences in regard to this. Another medical school said "*the survey picked up the same areas which we had learned about through our other mechanisms"*.

Three medical schools described the action points listed in the accompanying matrix as valuable material for discussion.

"*Whilst there are no surprises in the areas which students identify as stressful, the matrix which identifies possible strategies for stress reduction is thought provoking and worthy of greater consideration. Again, it overlaps significantly with information gathered from our students by other mechanism which provides helpful triangulation*".

"*It is reassuring to see similar problems common to students irrespective of their medical school. The matrix of suggested solutions is full of constructive suggestions which bear careful consideration*".

However, one school said "*more specific advice about our medical school (for example comparing culture with the culture in other schools) would have been helpful".*

One of the medical schools stated that it intended to feed the survey results into its larger curriculum and school review.

In terms of advice for those might want to use the survey suggestions included:

1. Timing its use not so close to examinations
2. Announcing in full year lectures with paper copies as well as using web platforms with online forms
3. Avoiding times when students have other questionnaires to complete.
4. Nominate (fund) someone to take lead responsibility.

One medical school said "*Yes do it – it was helpful to see what students think and are concerned about. It would also be good to stimulate as high a response rate as possible to give an accurate picture*".

5.4 Summary of results

This study obtained data from students in all five years of medical training at six UK medical schools. 2,735 responses to a questionnaire provide a representative sample (6.7%) of the UK medical school population and a response rate of 48%.

Looking at the raw data firstly, the f scores generated were highly significant (except for the 'demands' domain, which was still significant), reflecting the large population sampled. Although it was not possible to make direct comparisons between domains using raw scores it was clear that scores for each domain varied when broken down by medical school

Secondly, regression models using rescaled scores showed a significant variance within all but one domain across year groups (perceived support for personal/health issues), and a highly significant variance for all domains across style of programme. When analysing data at the 'year group' level, 2.16 was the lowest averaged mean score found, which was for the domain 'travel and orientation'. The highest averaged mean score was 3.54 for personal support for academic study. When analysing data at the 'style of course level, the lowest averaged mean score was again for travel and orientation (1.82) and again the highest was for personal support academic at 3.44.

Finally, the individual model generated estimates conducted to identify correlations between each of the eight domains and our proxy measure of wellbeing showed that improvements in most domains are associated with similar levels of change in wellbeing. The exception to this is the domain known as 'culture.' It appears that changes in culture elicit a relatively large change in wellbeing.

Using the above results, a simple tool was developed, to allow anonymous comparison between medical schools, providing an opportunity for insight into activity, with a view to improving performance. Analysis of median rescaled scores for each medical school over each domain showed that overall participating medical schools performed similarly. Medical schools facilitated the acquisition of knowledge and skills and provided perceived academic support to a higher level than the other domains.

If we take a more detailed approach looking for low and high scores within the analyses, the lowest score was a 1.01 rating of travel and orientation by year 1 students followed by safety (1.99) again for year 1 students. In terms of the high scores, year 5 medical students rated acquisition of knowledge and skills as 3.9 and 3.87 for perceived support academic by students attending problem based learning courses.

It was of interest that none of the analyses revealed a score over 4, indicating room for quality improvements in all domains.

The comparison between medical schools based on medians reinforced earlier analyses suggesting variation within each domain. The key message from this particular analysis is that variation exists and that within the variation is the opportunity for schools to learn from each other.

Finally, from a qualitative perspective, an anonymous comparison between medical schools was conducted, providing an opportunity for insight into activity, with a view to improving performance. Analysis of median rescaled scores for each medical school over each domain showed that overall participating medical schools performed similarly. Medical schools facilitated the acquisition of knowledge and skills and provided perceived academic support to a higher level than the other domains.

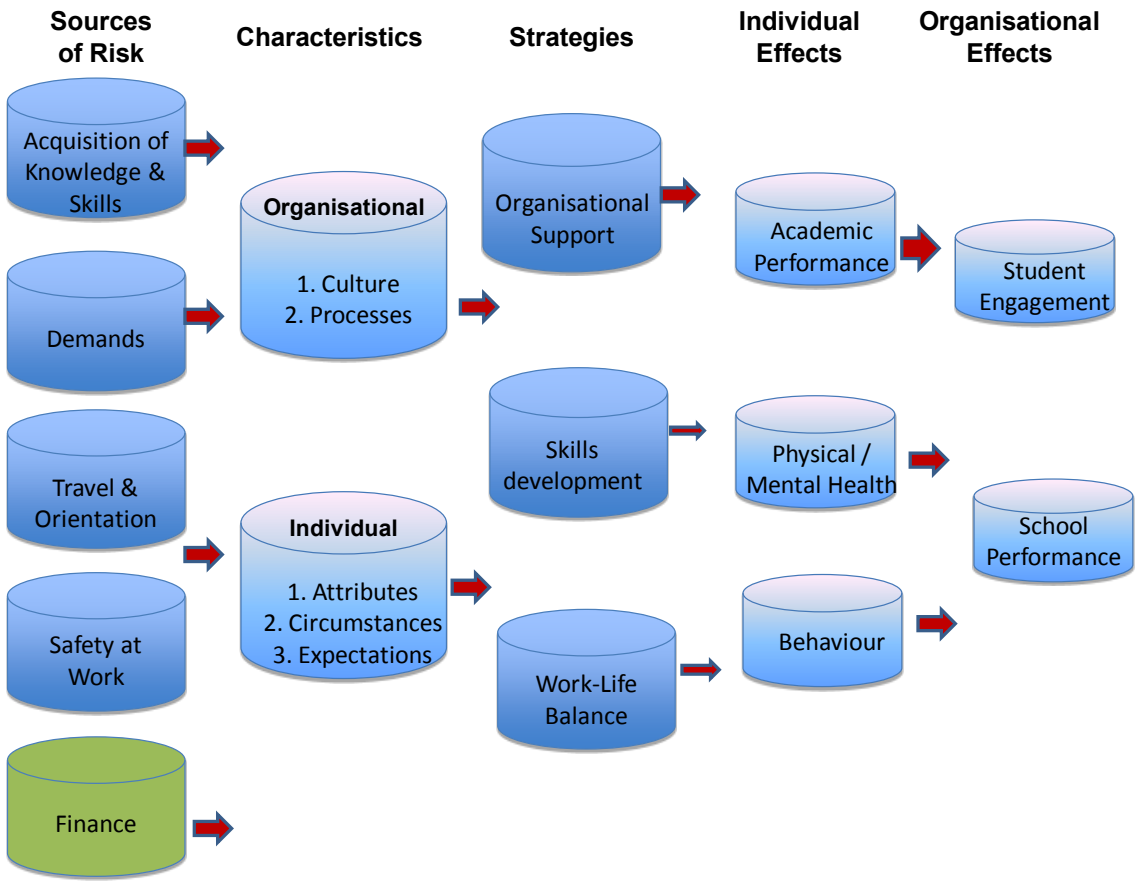
Qualitative data from the focus groups highlighted five key areas of importance to medical students:

1. Finance
2. Non-academic demands
3. Academic pressures
4. Work-life balance
5. Health

The free text comments from the questionnaire mentioned these areas also, as well as covering the main domains. The qualitative data from the focus groups and questionnaire also presented a number of solutions to identified problems.

Looking at the qualitative and quantitative results together, triangulation was achieved. The dynamic risk factors model shown earlier and can now be filled out in more detail, expanding on certain elements and adding in the issue of finance that came out of the qualitative findings (see Figure 10 overleaf).

Figure 10: Revised Dynamic Model of Risk



Finally, the evaluation data gathered from participating medical schools suggested that the tool had been useful and thought provoking, particularly the matrix of suggestions (appendix 8.4) outlining interventions that was sent out with the feedback reports. This enabled some of the medical schools to move beyond 'awareness' to 'action planning'. Recruitment of adequate numbers of students was flagged as an issue. Although one medical school highlighted that despite small numbers in their sample, they had found participating the study and feedback to be of value. It was interesting that the medical schools did not see it as tool that was competing with their existing mechanisms for exploring student wellbeing, but rather as a complementary approach capable of prompting formative improvement rather than delivering summative comparative assessments.

6.0 DISCUSSION AND CONCLUSION

6.1 Discussion

This study set out to understand medical students' perspectives of risk and how this may impact on their wellbeing during training. The aim was to develop a formative tool for medical schools to understand their own student population in more depth. The tool would provide the medical school with an overview of their strengths and weaknesses and how their course impacted on student wellbeing. Through qualitative data analysis it would also offer medical schools, students' perspectives on how areas may be improved and through this enhance engagement with the student population.

As a mixed method study, the robust questionnaire addresses major risk areas that medical students perceive to impact on their health and wellbeing during training. This tool designed to stimulate quality improvement has provided a method of understanding and enhancing student support, highlighted obstacles to seeking support and identified areas that would benefit from more effective support, tailored to each medical school's unique differences. The focus groups have provided additional and invaluable insights into potential solutions, suggested by students themselves.

Taken together the qualitative and quantitative results suggest that there is evidence that:

- The questionnaire seems to be measuring what it set out to measure.
- Medical schools do well in some areas but not so well in others.
- There is a school effect but controlling for that still provides significant differences across schools.
- Domain scores seem to be influenced by organisational and geographical factors.
- A shift, however small, in any domain will lead to an increase in wellbeing, but the biggest effect on wellbeing corresponds to a shift in culture, as defined by this report.
- The need to treat finance as a risk factor domain is important in developing the next version of the questionnaire.
- Students have plenty of creative ideas as to what some of the solutions could be.

This simple formative tool devised from the questionnaire results allowed anonymous comparison between medical schools for the purpose of stimulating discussion not judgment. It provided an opportunity for individual schools to gain an insight into their own activity, with a view to improving performance. The tool demonstrated that the participating medical schools overall performed similarly across each of the 8 domains. Medical schools facilitated the domains known as acquisition of knowledge and skills and provided perceived academic support to a higher level than the other domains. But reviewing activity in each of the domains provides an opportunity for schools to consider how they could they could take one step to improve the quality of what they provide across all the domains.

Evaluation data from the medical schools suggested that the found the tool to be a valuable addition to the processes that they already had in place to help them review student wellbeing and the factors that influence it.

A key strength of the study has been to gain an understanding of potential solutions. Organisational support strategies include ongoing, timely feedback, explicit learning objectives, providing a range of learning styles, planning timetables to allow usable blocks of time and raising awareness of formal organisational support available for stress. Skills development targeting individuals should cover education on fitness to practise issues to prevent fear of accessing help when needed and tailored group work can help to create a positive learning experience. Finally, addressing work-life balance includes providing advice and education around wellbeing, time-management and clarifying tutors' roles. Providing drop-in services (e.g. banking) and consideration of scheduling to prevent excessive travelling, minimise gaps between lectures and incorporate a reading week or a half day set aside to allow students to catch up with work, study, socialise or spend time on other activities. Additional strengths include; obtaining a large UK sample across all five years of medical training, and sampling from medical schools of differing sizes, course structures and geographical locations.

In terms of limitations, Objective measures of wellbeing were not used, instead a proxy measure of wellbeing was formed from two questionnaire items relating to feeling valued and respected. The very definition of wellbeing being dependent on a number of different factors, it is important to clarify that whilst changing 'culture' may have an impact, it is by no means certain.

The study identified trends across year groups only. No clear inferences can be made from this data as it is cross sectional but could be substantiated through further longitudinal studies.

The analysis suggests validity to the questionnaire and mirrors evidence from the literature. Initial analysis confirmed what is known about medical school and student populations. The smaller degree of difference within the two perceived support domains and domain known as work-life balance across the six medical schools are consistent with evidence from the Student Support Review (Cohen et al., 2012). The high degree of difference within the domains of travel & orientation and safety may represent differences in school policy, placements and geography. This confirmation of existing knowledge therefore begins the process of validating the questionnaire.

The questionnaire used in this study differs from others currently in use in the field, such as the Dundee Ready Education Environment Measure (DREEM) (Roff et al., 1997), in that it provides a measure of perceived risk rather than perceived quality, across a number of specific areas. The areas targeted in this study were identified through the D.E.T.T.O.L. model (Cohen, Khan, Allen & Sparrow, 2012), and basing the questionnaire in occupational psychology allowed the study to be grounded in further models of risk.

This tool sits firmly within the quality improvement literature in terms of how it can best be used. It is intended to be formative, to add value to existing mechanisms already in place and to engage medical schools regardless of their different starting points and aspirations. It has not been designed as a summative assessment to be used to make judgements. The comparisons between schools are simply provided to stimulate discussion.

Experience from other quality improvement tools shows the importance not only of robust data, but also of the role of an expert facilitator in stimulating discussions about next steps in terms of making improvements. In other QI initiatives, the facilitator is somebody who is familiar with the tool and the environment in which it is being used; in this case the medical schools (Rhydderch et al., 2006). Exploring the role of facilitation was outside the remit of the current study, but a useful avenue for future research might be to develop a facilitation model that best helps medical schools get maximum usage out of the tool. One approach that has been shown to be successful has been for a facilitator who acts as a champion and expert in a tool who is based within or employed within the organisation in an existing role.

It is clear that both the DETTOL model and the revision of the OSI model taken together have provided a valuable dynamic model through which to consider the how the presences of risk factors may impact on medical schools and medical students to have positive and negative outcomes. It is limiting to have a questionnaire designed to provide formative feedback without the inclusion of a framework for understanding how changes or interventions can have a positive impact. One of the most powerful aspects of the study was realising the quality of the ideas that the students had for making improvements. It was interesting that many of their ideas collated in the Matrix (appendix 8.4) were located around culture change, curriculum management and supporting students. These categories were created independently by the researcher who ran the focus groups. However, when you revisit the dynamic model, adapted from the OSI, it is clear that the students are suggesting interventions that fit clearly within the second and third columns of the model. Basically, what they are suggesting echoes the model. Simply put, the way to reduce the impact of the risk factor domains is to make proactive organisational change around culture, management processes and educating individuals about coping strategies.

The revised model of risk highlights just how interconnected risk factors and individual characteristics are. The revised model provides a clear illustration of how risk factors can be amplified or dampened by organisational and individual characteristics, ultimately impacting on school performance and student engagement. Strategies to increase the effectiveness of support at medical schools can be directed at the three areas shown in the middle column of the model: organisational support, skills development, and work-life balance.

The provision of support for medical students is an area of growing concern in the UK and internationally. Despite the support already available, there is clear evidence that we are not meeting students' needs. At present the true prevalence of common mental health problems and other mental ill health in medical students is not clear (Ahmed et al., 2012). We believe that the provision of effective support at medical school is the first step to improving coping strategies, and the health and wellbeing of doctors. Through influencing both undergraduate and postgraduate education this will enhance patient safety and performance in the NHS, which Boorman highlighted in 2009 (Boorman, 2009), and by the GMC in their recent publication about health and disability in medical students (GMC, 2012). This work is of international relevance and as such the study authors are already in dialogue with other researchers working in this field who have expressed an interest in future collaboration in both Europe and Canada.

6.2 Conclusion

The major findings from this study were that the questionnaire designed, "The Cardiff Medical School Wellbeing Questionnaire" has face and content validity and is able to achieve a good response rate from students. The questionnaire generated 8 essential 'domains' of risk. The focus groups generated some very practical ideas for improvements encapsulated in the matrix (appendix 8.4). The theoretical dynamic model relating risk factors to organisation and individual process and outcomes provides a potential model through which to operationalise quality improvements.

The study has allowed the development of a simple formative tool to understand how different risk factors may impact on students' wellbeing. Based on quality improvement principles it enables medical schools to review key areas of risk as well as providing an opportunity to learn from other schools' experiences and best practice. We would like to thank the medical students from across the UK for contributing to a dynamic model of change that can directly allow medical schools to enhance their learning environments to support students more effectively.

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8.0 APPENDICES

8.1 Questionnaire, including information sheet and consent form

Title: Medical students perspectives of the risk associated with studying medicine

Information Sheet

Cardiff University are currently conducting a survey that aims to understand medical students perspectives of the risk associated with studying medicine. The survey has been developed with a 5th year medical student as part of their special clinical project. It is also part of a larger study to understand how to ensure your time at medical school is the best possible experience for you.
The survey is being distributed to your medical school and we would really appreciate your participation in this study.

The Study

You are being asked to participate by completing a questionnaire, which will take approximately 10 minutes. All information that is collected from you is anonymous; therefore it is impossible to trace this information back to you individually. Your participation is completely voluntary. If you have any questions about the questionnaire please contact Menna Brown at brownm17@cardiff.ac.uk.

Consent

Please read the following carefully:

1. I confirm I have read and understood the information for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand my participation is voluntary and that I am free to withdraw at any time without giving reason up until the questionnaire has been submitted. ☐

3. I understand that the information provided by me is anonymous, so that it is impossible to trace this information back to me individually. I understand that, in accordance with the Data Protection Act (1998), this information may be retained for 10 years prior to completion of the study. All data will be destroyed after this time period. ☐

4. I understand that data collected in this survey may be presented at conferences and meetings. ☐

5. I understand that by completing the questionnaire I am agreeing to take part in the above study and give my permissions for my responses to be used. ☐

Student risk project questionnaire

1. Are you

Male	
Female	

(please tick the box that most applies to you)

2. Age in years:

18- 21	
22 - 25	
26 - 30	
31-35	
36-40	
40+	

3. Marital Status:

Single	
Married	
In a Civil Partnership	
Divorced	
Widowed	
Living with partner	
Rather not say	

4. Do you have any dependent children?

Yes	
No	

5. Is English your first language?

Yes	
No	

6. Year of study:

1	2	3	4	5	Intercalated year

7. Is this your first degree?

Yes	
No	

8. What is your ethnic group:

White - Irish	
White - British	
White - any other White background	
Other Ethnic Group - Chinese	
Other Ethnic Group - Any other Ethnic Group Mixed - White and Black Caribbean	
Mixed - White and Black African	
Mixed - White and Asian	
Mixed - any other Mixed background	
Irish Traveller	
Black or Black British - Caribbean	
Black or Black British - any other Black background	
Black or Black British - African	
Asian or Asian British - Pakistani	
Asian or Asian British - Indian	
Asian or Asian British - Bangladeshi	
Asian or Asian British - Any other Asian background	
I do not wish to disclose	
Other	

9. What is your religion?

None	
Christian *(including Church of England, Catholic, Protestant and all other Christian denominations)*	
Buddhist	
Hindu	
Jewish	
Muslim	
Sikh	
Other (Please write in)	
Prefer not to say	

Section One

Please tick how strongly you agree or disagree with each of the statements below:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
1. I find my medical studies intellectually stimulating						
2. Based on my experience of medical school so far, the extent to which we are assessed is reasonable.						
3. I find it difficult to maintain my concentration when I am sat in lecture theatres all day						
4. When on placement I come home feeling physically exhausted.						
5. Medical school is not as competitive as I expected it to be.						
6. I am concerned that I will be unable to master the entire pool of medical knowledge.						
7. Medical training allows plenty of time for leisure activities.						
8. I feel confident communicating with patients.						
9. I feel confident communicating with patients' relatives and carers.						

Section two

Please tick how strongly you agree or disagree with each of the statements below:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
10. I understand the responsibilities of training in a regulated profession						
11. I know what to do if I incur a needle stick injury						
12. I find it difficult enduring the long hours associated with clinical training.						
13. I find it difficult enduring the responsibilities associated with clinical training						
14. I know what is expected of me as a medical student when I am on the wards						
15. I am not sure what tasks I am meant to complete when I am on the wards						
16. I have received sufficient training in manual handling techniques whilst at medical school.						
17. I am always trained in the tasks I am asked to complete when on the wards						
18. I do not feel confident manual handling whilst on placement						

Section three

Please tick how strongly you agree or disagree with each of the statements below:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
19. Medical training controls my life and leaves little time for anything else						
20. I still go on thinking about work problems in my leisure time						
21. I find it easy to manage my time effectively						
22. I am given a sufficient number of breaks most days						
23. There never seems enough time to get from one teaching session to the next						

Section Four

Please tick how strongly you agree or disagree with each of the statements below:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
24. Travel expenses incurred whilst on placement are a source of concern to me.						
25. Accommodation is always well organised for me by the medical school when I am away on placement.						
26. I always feel safe when travelling to and from placement.						
27. I find it difficult arranging transport to get to and from placement.						
28. Travelling long distances to my placements is a concern that I think about.						

Section five

Please tick how strongly you agree or disagree with each of the statements below:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
29. Medical school fosters a sense of anonymity and feeling of isolation among the students.						
30. I work in groups more often than I work alone.						
31. I do not feel confident working alone.						
32. I feel confident communicating with clinical supervisors.						
33. I feel confident communicating with academic supervisors.						
34. Sometimes I wish I had more support from my personal tutor when I am on placement						
35. I feel I have good support from the medical school to manage my personal/health related issues						
36. I know who to speak to if I am struggling with academic progress						
37. I feel comfortable asking for adjustments to accommodate my religious beliefs/values						
38. I feel comfortable asking for adjustments to help me overcome physical/personal/health issues (NB – 'adjustment' may refer to time, attendance or practical adaptations)						
39. I feel comfortable managing situations that challenge my moral values						
40. I feel supported asking for help to manage any mental health issues I might experience						
41. I feel there is an expectation from the medical school for me to be resilient whilst on placement						
42. The medical school treats me with respect						
43. The medical school makes me feel valued						

Section six

Please tick how strongly you agree or disagree with each of the statements below:

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	N/A
44. I sometimes struggle to see the screen during lectures						
45. I feel I have been trained sufficiently to use equipment whilst on wards						
46. When on placement knowing the layout of the hospital is a worry for me						
47. I am given clear guidance to ensure I am able to find everything I need when I am on the wards.						

Any further comments you wish to raise please write below:
……..
……..
……..
……..
……..
……..
……..

Thank you for completing the questionnaire.

If you have any queries, please do not hesitate to contact the Cardiff project lead:

Dr Debbie Cohen
Senior Medical Research Fellow
Centre for Psychosocial and Disability Research
Cardiff University, 54 Park Place
Cardiff
CF10 3AT
029 2087 0457
Email: cohenda@cf.ac.uk

8.2 Domains and outcome measure

Domains

The eight domains were: demands, work-life balance, travel & orientation, safety at work, acquisition of knowledge and skills, and culture.

Demands was comprised of 10 questionnaire items:

2	**Based on my experience of medical school so far, the extent to which we are assessed is reasonable.**
3	**I find it difficult to maintain my concentration when I am sat in lecture theatres all day**
4	**When on placement I come home feeling physically exhausted.**
5	**Medical school is not as competitive as I expected it to be.**
10	**I understand the responsibilities of training in a regulated profession**
12	**I find it difficult enduring the long hours associated with clinical training.**
13	**I find it difficult enduring the responsibilities associated with clinical training**
14	**I know what is expected of me as a medical student when I am on the wards**
22	**I am given a sufficient number of breaks most days**
23	**There never seems enough time to get from one teaching session to the next**

Work-life balance was comprised of 10 questionnaire items:

7	**Medical training allows plenty of time for leisure activities.**
19	**Medical training controls my life and leaves little time for anything else**
20	**I still go on thinking about work problems in my leisure time**
21	**I find it easy to manage my time effectively**

Acquisition of knowledge and skills was comprised of 7 questionnaire items:

1	**I find my medical studies intellectually stimulating**
6	**I am concerned that I will be unable to master the entire pool of medical knowledge.**
8	**I feel confident communicating with patients.**
9	**I feel confident communicating with patients' relatives and carers.**
15	**I am not sure what tasks I am meant to complete when I am on the wards**
44	**I sometimes struggle to see the screen during lectures**
45	**I feel I have been trained sufficiently to use equipment whilst on wards**

Safety at work was comprised of 6 questionnaire items:

11	**I know what to do if I incur a needle stick injury**
16	**I have received sufficient training in manual handling techniques whilst at**

	medical school
17	**I am always trained in the tasks I am asked to complete when on the wards**
18	**I do not feel confident manual handling whilst on placement**
30	**I work in groups more often than I work alone**
31	**I do not feel confident working alone**

Travel & orientation was comprised of 7 questionnaire items:

24	**Travel expenses incurred whilst on placement are a source of concern to me.**
25	**Accommodation is always well organised for me by the medical school when I am away on placement.**
26	**I always feel safe when travelling to and from placement.**
27	**I find it difficult arranging transport to get to and from placement.**
28	**Travelling long distances to my placements is a concern that I think about.**
46	**When on placement knowing the layout of the hospital is a worry for me**
47	**I am given clear guidance to ensure I am able to find everything I need when I am on the wards.**

Culture was comprised of 2 questionnaire items:

29	**Medical school fosters a sense of anonymity and feeling of isolation among the students.**
41	**I feel there is an expectation from the medical school for me to be resilient whilst on placement**

Perceived support for academic issues was comprised of 3 questionnaire items:

32	**I feel confident communicating with clinical supervisors.**
33	**I feel confident communicating with academic supervisors.**
36	**I know who to speak to if I am struggling with academic progress**

Perceived support for personal and/or health issues was comprised of 6 questionnaire items:

34	**Sometimes I wish I had more support from my personal tutor when I am on placement**
35	**I feel I have good support from the medical school to manage my personal/health related issues**
37	**I feel comfortable asking for adjustments to accommodate my religious beliefs/values**
38	**I feel comfortable asking for adjustments to help me overcome physical/personal/health issues (NB – 'adjustment' may refer to time, attendance or practical adaptations)**

39	**I feel comfortable managing situations that challenge my moral values**
40	**I feel supported asking for help to manage any mental health issues I might experience**

Proxy Outcome Measure

A composite measure comprising of two items on the questionnaire, was chosen as the proxy outcome for wellbeing.

42	**The medical school treats me with respect**
43	**The medical school makes me feel valued**

8.3 Focus group information sheet and consent form

PARTICIPANT INFORMATION SHEET

Study title: Medical students' perspectives of the risk associated with studying medicine

You are being invited to take part in the research study named above. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

1. **What is the purpose of the study?**

It is recognised that training for medical students requires processes and procedures that differ from many other students studying at university. There are high levels of health problems and stress recorded in medical students across the UK and Europe. This study aims to gain the perspectives of the medical students to understand the perceived risks of being a medical student. Information from students themselves will help to address specific concerns and some of the health culture seen in medical school.

In addition the Division of Medical Education in Cardiff University is developing a Student Risk Assessment Protocol. This protocol will help make more transparent the processes and support systems, which will encompass Disability/Long Term Illness, Pregnancy/Maternity and Short Term Illness.

2. **Why have I been chosen?**

All medical students studying at Cardiff and Leicester Medical Schools will be invited to take part in this study.

3. **Do I have to take part?**

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

4. **What will happen to me if I take part?**

You are being invited to take part in one focus group, which will take place during your lunch break. The focus group will last one hour. You will be asked to discuss the health risks associated with being a medical student. Focus groups will consist of 10 – 15 students. You will be offered a free lunch, free leaflets and merchandise such as memory sticks (provided by the GMC) and a £10 Amazon gift voucher for your attendance. The focus groups will be audio recorded and field notes will be taken.

5. **What about confidentiality?**

Audio recordings and field notes will be anonymised so that it will be impossible to trace information back to you individually. In accordance with the Data Protection Act (1998), information may be retained indefinitely.

6. **What will happen to the results of the research study?**

Results of the study will be written up in the form of a report. In addition, research findings may also be presented at appropriate conferences, and reported and published to further facilitate evidence-based practice.

7. **Who is organising and funding the research?**

The research is being lead by Cardiff University in collaboration with Leicester Medical School and the GMC. The GMC are funding the project.

8. **Contact for Further Information**

If you would like any further information please contact Dr Debbie Cohen:

Dr Debbie Cohen
ISP
54 Park Place,
Cardiff University,
Cardiff
CF10 3AT

Email: cohenda@cf.ac.uk
Tel: 02920 870878

Thank you for your interest in the study

8.4 Focus Group Matrix

	Medical School Culture	Curriculum Management	Supporting Students
Academic Pressures	**Feedback** A supportive learning environment should provide timely response to educational effort; providing ongoing and feedback and prompt exam mark.	**Exams** Ensuring exams are scheduled to allow students time to adequately prepare can relieve some pressure. Providing access to practice papers along with small-group learning help students feel more prepared.	**Amount of knowledge required** Students feel that they can never know enough and feel pressure to learn as much as possible. Students need advice on what to study and in how much detail.
	Learning Objectives Ensuring students are given relevant and explicit learning objectives may help alleviate some of the uncertainty as to what to study.	**Learning styles** Providing students with a range of learning styles and delivery modes may help students to feel supported with their learning.	
Non academic demands	**Futures** Some students begin thinking about their futures from year one; students should be provided with accurate careers advice from the outset to help them navigate the system effectively.	**Scheduling** Providing a fixed timetable to minimise the gaps between lectures and as well as informing students of their placements well in advance , allows students to more effectively plan their time.	**Competition** Students should be educated about the additional stress that competition can cause, so that students are cooperative with their peers rather than set in competition for their learning.
	Consultants as teachers/ treatment by seniors Some medical schools have a negative and uncaring culture leaving students feeling under-valued and not respected. Ensuring students and consultants know what is expected may help to address some of uncertainty faced by students and some of the unfair expectations of consultants.	**Professionalism** Highlighting to students the link between what they're learning with being a good doctor may help reduce the clash between the need to be a good doctor and the need to study to pass exams. Advice with regard to appropriate behaviour and expected work wear could be of further help.	
		Fitness to practice Students need educating about the issues surrounding fitness to practice to prevent a fear of accessing help when needed.	

Work-life balance	**University support** Student support is vital for the wellbeing of students; academic support, individual personal support and tailored group work can all help to create a positive learning experience for students. The students would benefit from the clarity of who their tutors are and the role they will each play in their personal support. Other channels of support, such as Med Soc and Med Soc newsletters also provide a vital channel between students and staff.	**Short holidays** Some students suggested incorporating a reading week or a ½ day set aside to give them a chance to catch up with work, study, socialise or spend time on other activities.	**Educational Isolation** Many students feel they need to spend all of their time studying and as such they need educating in the benefits of having activities away from the course.
		Lack of available time Students accept that they will have little time to pursue activities, however frustration sets in when scheduling makes this even harder. On site drop-in services (Bank, Dr etc) could also be arranged.	**Lack of time** Advising students how to manage their time may help students to deal with managing the practicalities of life alongside studying.
		Travel Consideration of scheduling to prevent excessive travelling and travelling a long way at unsociable hours when safety could be an issue, may help reduce travel issues.	
Financial		**Available time and income** Planning timetables to ensure students have usable blocks of time free may help free some time for students to find employment to relieve some of the financial burden students face.	**Managing course and living costs** Teaching students to manage their finances at the start of the course may help to prevent some students from getting into financial difficulty. Consideration about managing bursaries and loans.

		Cost of travel Ensuring travel reimbursements are paid quickly may help to alleviate some financial pressure.	**Cost equipment** Medical schools could help students source more affordable equipment or buy equipment in bulk, and provide E-books.

Health		**Physical demands** Medical schools need to address the poor culture surrounding managing student health. There is a need to educate students about the need to look after their health, eating well, taking exercise and sleeping sufficiently	**Guilt** Educating and allowing students time for exercising and socializing with others outside of the course may help to alleviate the guilt students feel when pursuing outside activities. Past students and Drs to share how they managed this.
			Stress Students need to be aware of the support available. Support must be confidential and with no stigma attached.

"A Risky Business" - Medical students' perspectives on factors that impact on their wellbeing during training

March 2013
Feedback Report
Example Medical School

Dr Debbie Cohen
Sarah Winstanley
Paula Palmer
Joanna Allen
Sophie Howells
Dr Melody Rhydderch

1.0 EXECUTIVE SUMMARY

The GMC commissioned a study into medical students' perspectives on factors impacting on their wellbeing during training. 2,735 responses to a questionnaire distributed at six medical schools were received, equating to approximately 6.7% of the total UK medical school population.

The questionnaire focused on eight 'domains' that encompassed the various aspects of studying medicine: work-life balance, safety, culture, acquisition of knowledge and skills, perceived academic support, perceived health/personal support, demands, and travel and orientation.

Analysis explored how the medical schools functioned from a students' perspective across the eight domains' and how this impacted on wellbeing (the outcome measure). The results showed that all schools tend to function very well at some things and much less well at others. The results also suggested that the biggest gain in wellbeing could be achieved through increasing the score in the domain of 'culture'.

Example Medical School achieved its highest score in the domain relating to providing support for academic issues, and its lowest scores in the domains relating to facilitating a work-life balance, and supporting students around travel and orientation, and safety issues.

Focus groups conducted alongside the questionnaire across four of the medical schools provided an insight into students' views on potential solutions to the factors impacting on their wellbeing.

Contents

2.0 INTRODUCTION

Being a medical student is indeed a risky business – travelling back from placements in the dark, huge competition with peers, balancing academic and clinical work, isolation, long hours, and financial pressures are all factors that may impact on a student's wellbeing. The GMC commissioned research into how medical students' perceive these risks, and Cardiff University undertook this study at six medical schools across the UK.

2.1 Structure of this report

This report gives a brief overview of the survey and focus groups carried out at the six medical schools, followed by your medical school's individual results. The full report will be published by the GMC at the end of May.

2.2 How this report should be used

The feedback in this report is based on your students' responses to the questionnaire and the issues that were raised in the focus groups across the medical schools that took part. Before reading the results, it might be helpful to bear in mind the following:

- No value judgements are implied by the comments made. Each medical school has individual characteristics, such as geography, that put it in a unique context, and it is up to each school to decide the extent to which the areas highlighted in this report impact on them.
- Every effort has been made to present a balanced picture.
- Everything reported in this analysis is based on what students have said.

3.0 STUDY OVERVIEW

3.1 Background

This study was developed to look at medical students' perspectives on factors that impact on their health and wellbeing during training. The objective was to develop a tool for UK medical schools to enhance student wellbeing. The tool would provide medical schools across the UK with a method of understanding and enhancing student support specific to their own students' needs and concerns, by reducing obstacles to seeking support and recognising areas for more effective support.

3.2 Methods

This was a phased mixed method study. Phase 1 included the development and dissemination of a questionnaire to medical students at Cardiff and Leicester medical schools, plus focus groups to all year groups at both medical schools. Phase 2 was an extension of this study requested by the GMC in June 2012. The study was expanded to cover a wider group of medical schools. Imperial, Brighton, Bristol, Hull and York, and Peninsula medical schools were recruited to the study. The questionnaire was distributed to these five additional schools and further focus groups were conducted. Theoretical models to understand and measure wellbeing, and workplace risk and support were used to underpin the work.

Questionnaire

The focus groups and questionnaire design followed work developed at Cardiff University. The model of risk (D.E.T.T.O.L.) was developed through collaboration with Cardiff University, The Royal College of General Practitioners and the Department for Work and Pensions. The model developed methods for GPs and other secondary care doctors to undertake simple risk assessments of their patients' health and their work. The D.E.T.T.O.L. model of risk assessment is detailed in Figure 1 below where each of the six letters in the acronym represents an area of potential risk.

- **D**emands: physical, intellectual
- **E**nvironment: wards, lectures, (e.g. dusts, chemicals, size of rooms)
- **T**iming: shift work, early start, long hours
- **T**ravel: between sites, long distances, lone travel
- **O**rganisational: timetables, teaching, support
- **L**ayout: ergonomics, work equipment

Figure 1: D.E.T.T.O.L. model

The questionnaire was designed with medical students at Cardiff University, piloted and disseminated through both e versions and hard copy to all medical schools. The questionnaire consisted of 47 questions (items) based on the risk assessment model D.E.T.T.O.L.

Following completion of the questionnaire the 47 items were further analysed and restructured into 8 'domains'. This is shown in Figure 1 below.

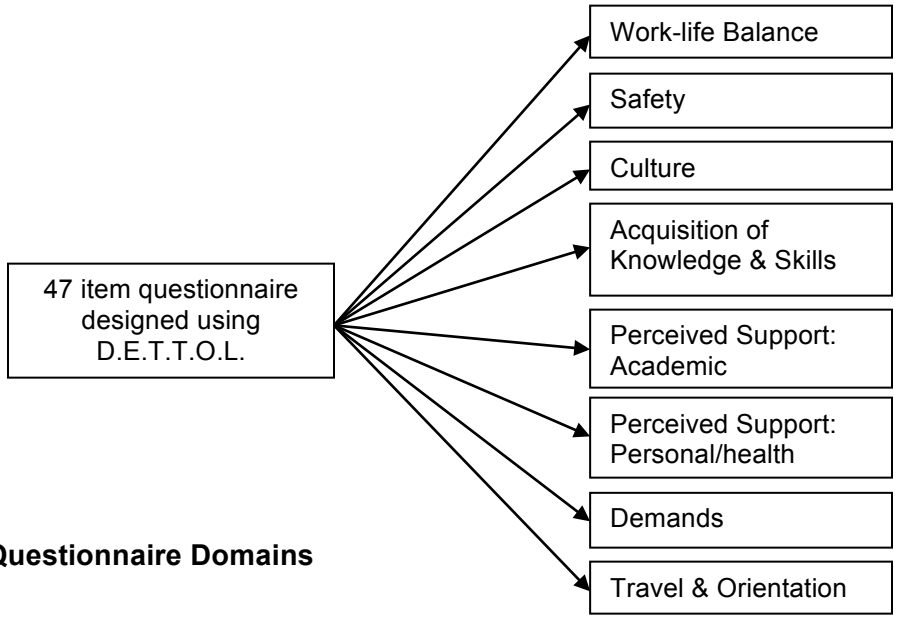

Figure 2: Questionnaire Domains

As well as looking at domains, a proxy outcome measure of wellbeing was chosen, that was a composite of two questionnaire items focused on 'feeling respected' and 'valued'.

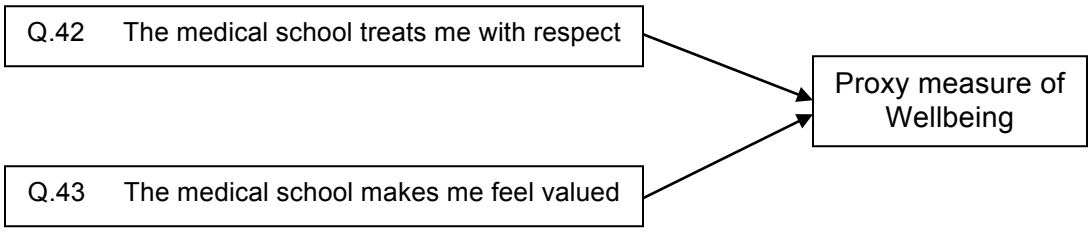

Figure 3: Questionnaire Proxy Outcome Measure of Wellbeing

Focus Groups

Focus groups were conducted with all year groups at Cardiff and Leicester medical schools in Phase 1, and with single year groups at Brighton and Bristol medical schools in Phase 2. An average of 12 students per group took part in 12 focus groups. The nominal group technique was employed to enhance engagement. The focus groups included both open questions and a ranking exercise. Groups lasted for an hour and were audio recorded and field notes taken. The focus group data was analysed using thematic analysis and the results were triangulated with the questionnaire data.

4.0 RESULTS

4.1 Quantitative Results

4.1.1 General

Response Rate and Demographics

2,766 responses were received across the seven medical schools. Response rate from one medical school was only 2%. Therefore, as the sample was not likely to be representative and given the low response rate, it was removed from further analyses.

Analysis was conducted on the remaining 2,735 responses, which equates to approximately 6.7% of the total UK medical school population. The response rate for **Example Medical School** was **47%**, compared to an overall response rate of 48% to the questionnaire across the six medical schools.

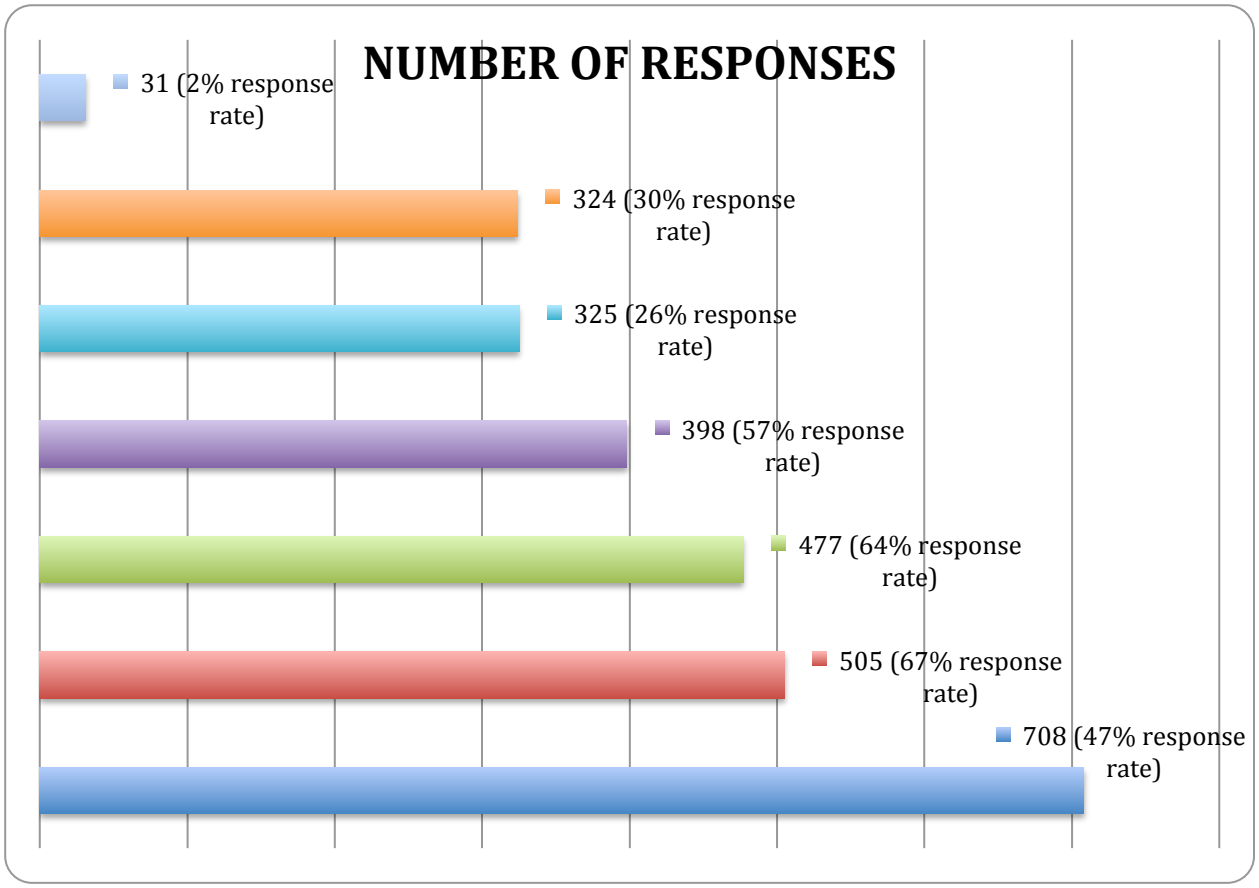

Figure 4: Questionnaire Response Rates

The demographic data collected was compared to the data received from the GMC and initial analysis suggests that that our sample is representative of the UK medical school population.

Table 1: Demographic Profile of Questionnaire Sample

School (N=2,735)	**N (%)**		**Year of study (N=2,725)**	**N (%)**
School 4	397 (14.52)		1	755 (27.71)
School 3	322 (11.77)		2	572 (20.99)
School 7	709 (25.92)		3	527 (19.34)
School 5	477 (17.44)		4	470 (17.25)
School 6	506 (18.50)		5	401 (14.72)
School 2	324 (11.85)			
Gender (N=2,734)			**First degree (N=2,735)**	
Female	1,751 (64.05)		No	541 (19.78)
Male	983 (35.95)		Yes	2,194 (80.22)
Age (N=2,733)			**Ethnicity (N=2,729)**	
18-21	1,560 (57.08)		White	2,014 (73.80)
22-25	896 (32.78)		Black	75 (2.75)
26+	277 (10.14)		Asian	401 (14.69)
Marital status (N=2,735)			Mixed	84 (3.08)
Single	2,449 (89.54)		Chinese	64 (2.35)
Married	255 (9.32)		Other	91 (3.33)
Rather not say	31 (1.13)			
Children (N=2,734)			**Religion (N=2,719)**	
No	2,690 (98.39)		Christian	1,126 (41.41)
Yes	44 (1.61)		None	1,076 (39.57)
First language English (N=2,734)			Other	442 (16.26)
No	338 (12.36)			
Yes	2,396 (87.64)			

Analysis

An average score was calculated for each domain. Because some questions were phrased positively and others negatively, the scores for all of the domains were then rescaled, to produce 1-5 mean values, where 1 was a low score and 5 a high score. Our proxy measure of wellbeing was also rescaled.

Analysis was conducted to explore the relationship between each of the 8 domains, and our proxy measure of wellbeing. Full details of this will be contained in the main GMC report. The headline result is that improvements in most domains are associated with similar levels of change in wellbeing, apart from travel and culture. It would appear that travel makes little difference upon wellbeing; however, changes made in the culture will elicit a large change in wellbeing.

When looking at the results that follow, caution should be exercised in the temptation to focus attention purely on the domains that our analysis indicated have the biggest effect on the proxy of

wellbeing - it is important to remember that as our revised risk factors model has shown, the domains are all interconnected.

Table 2 allows a general comparison of results across schools and can be used to help produce the end tool which would provide each school with an overview of how they have performed and areas in which they may improve.

Example Medical School is school 'C' in the below table.

Table 2: The mean score for each school and the total for each of the domains.

	Acquisition of knowledge & skills	Work life balance	Demands	Travel & orientation	Safety	Culture	Perceived Support: Academic	Perceived Support: Personal/health
A	4	3	3	3	3	4	4	3
B	3	2	3	1	2	3	4	3
C	3	2	3	2	2	3	4	3
D	4	3	4	3	4	3	4	3
E	4	2	3	1	3	3	4	3
F	4	2	3	2	4	3	4	3
Total	4	2	3	2	3	3	4	3

Table 2 shows that overall each school tends to perform similarly on each of the domains. The other factor is that all schools do very well at some things and are rather poor at others. It appears that all schools facilitate the acquisition of knowledge and skills, and provide support in relation to academic issues to a higher level than the other domains.

4.1.2 Personalised

Domain Scores

Table 3 gives an overview of how **Example Medical School** has been rated in each domain, using the mean rescaled scores.

Using a 1-5 scale for each of the domains enables incremental improvements within an overall goal of quality improvement, irrespective of a medical school's starting point.

Table 3: The mean score for each of the domains.

	Major improvements needed		Minor improvements needed		Excellent
	1	2	3	4	5
Acquisition of Knowledge & Skills					
Work-life Balance					
Demands					
Travel & Orientation					
Safety					
Culture					
Perceived Support: Academic Issues					
Perceived Support: Personal / Health Issues					

Each domain is briefly described below, and some illustrative quotes from the student survey across all medical schools presented to highlight the type of issues the domain relates to.

The domain of **Perceived Support for Academic Issues** includes items relating to communication with academic/clinical supervisors, and where to seek support when needed.

"Wish for more student/tutor contact and teaching more so than self directed learning. Guidance please."

"I feel there is a total lack of academic support and of organisation."

The domain of **Acquisition of Knowledge and Skills** includes how students perceive the pool of knowledge they are to master, how confident they feel communicating with patients and relatives/carers, whether they feel prepared on the wards and whether they can view lecture screens adequately.

"There is no explanation of the depth and breadth of knowledge required."

"I often feel pulled in two different directions. There are the clinical staff objectives and the medical school objectives."

The domain of **Work Life Balance** has items that relate to time for leisure and other non-work activities, time managements and whether work problems impact on leisure time.

"*You have to block out 8am-5pm Monday to Friday for placement which makes it difficult to arrange anything. I can't get to the bank, doctors or sort out accommodation"*

"You become isolated from the non-medic world"

The domain of **Demands** includes issues such as assessment, maintaining concentration, physical and time demands, competitiveness, and responsibilities of the profession.

"Too many exams to revise for in too little time."

"Too much is expected from you."

The domain of **Travel & Orientation** covers all aspects relating to the travel required whilst training, as well as orientation on wards and in hospitals.

"Zero introduction to wards, how a hospital works etc. feel completely lost."

"Travel expenses and time to and from placements is a REAL concern"

The domain of **Safety** has items that relate to needle stick injuries, manual handling, lone working and training in ward tasks.

"Late finishing days in the winter are of concern due to the relative un-safety of a single female walking home in the dark"

The domain of **Culture** looks at how students perceive isolation and expectations of resilience.

"Can be quite hostile/lonely among medical students at times"

"Being registered treats me like a child and does not allow for self-directed learning to extent needed."

The final domain, of **Perceived Support for Personal or Health Issues** covers perceived support on placement, adjustments, managing moral conflicts and mental health concerns.

"The university have been very inflexible when I have requested certain placements etc due to personal circumstance."

"I think student support address many issues that other medical schools do not"

4.2 Qualitative Results

The focus groups conducted across the different medical schools highlighted five areas that were of importance to medical students. These were:

- Financial
- Non-academic demands of medical training
- Academic pressures
- Work-life balance
- Health

These top five areas sit across the eight domains of the survey – for example, finance could sit under the domain of travel and orientation if referring to travel costs, or acquisition of knowledge and skills if referring to expensive text books. It is noted here that finance was found to be a significant area of concern raised by students in the focus groups - something not highlighted by the questionnaire items, but reinforced also in the open comments of the survey.

Finance

- *"You have the added cost of buying clothes for placement, as well as books and stethoscope. You spend a lot of money in the first year on books alone"*
- "*The costs incurred for travelling can cause extra debt*"
- "*The terms are longer than other courses, however the student loan amount is exactly the same. Medical students have an extra 13 weeks of term compared to other courses"*

Non academic-demands

- *"The highly competitive environment is worrying and reiterated constantly"*
- "*There's unnecessary pressure on professionalism*"
- "*Often the consultants are unclear on what level of knowledge they should expect from year 4 students"*
- "*It's difficult to predict working hours so I'm unable to organise anything*"

Academic Pressures

- *"Too many exams to revise for in too little time."*
- *"They should assess us more frequently."*
- *"Too much is expected from you."*

Work-Life Balance

- "*Time pressure – there aren't enough hours in the day. A one hour lecture can lead to 4 hours work by the time you have done the reading and written up the notes"*
- "*You have to block out 8am-5pm Monday to Friday for placement which makes it difficult to arrange anything. I can't get to the bank, doctors or sort out accommodation"*

Health

- "*Not knowing what to expect is really stressful and causes a lot of anxiety"*
- "*Stress is good, it makes you resilient"*
- *"You work really long hours when on placement so feel exhausted by the end of the day. Feel too tired to do anything or go anywhere when you get home"*
- *"I don't have time to exercise"*

Figure 5: Quotes from Focus Groups (all medical schools)

The free comments from the open question of the questionnaire were also analysed - over 250 comments were made and these covered the main domains in the survey, plus the additional issues raised in the focus groups. Of interest here was that the nature of the comments reflected in the anonymity of the questionnaire. Some comments raised here were more vociferous, and a small number covered areas not disclosed at the focus groups.

"I feel a bit like a statistic that is put through the system and pushed to improve the medical schools standing on a national basis, rather than being pushed to better myself and get better at my job."

"Areas where I have felt undervalued are only highlighted when undergraduate teams tell students at free lunches where there is compulsory attendance to "wait until the doctors have eaten and you can eat the leftovers". Times like this make students feel completely undervalued and not respected."

"At medical school, we are just a number. There is little or no personal tutor support, the NHS bursary scheme is a nightmare and I average over 3K in expenses for medical school, there is little recognition of extra-curricular efforts beside rugby and rowing. It's still a place for the white, male, middle and upper classes."

Figure 6: Quotes from Survey Open Question (all medical schools)

5.0 SOLUTIONS

Reasons for risk can be addressed at both organisational and individual levels and could include focus on:

- Organisational support
- Skills development
- Work-life balance

The findings from the focus groups could help shape some of the ways in which these issues are addressed. Some of the ways an organisation can be supportive relate to organisation and administration details, rather than organisational support itself. Figure 4 below shows some of the suggested solutions that arose from the focus group data.

ORGANISATIONAL SUPPORT STRATEGIES

Support for academic pressures:

- Ongoing, timely feedback and prompt exam marking
- Explicit learning objectives: advice on what to study and in how much detail
- Scheduling exams to allow adequate preparation time
- Providing a range of learning styles and delivery modes

Support for finance issues:

- Planning timetables to allow usable blocks of time makes part time employment an option
- Timely processing of travel expense claims
- Help with sourcing affordable equipment, or perhaps buying equipment in bulk. E-books instead of costly hardcover books.

Support for health issues:

- Raise awareness of formal organisational support (confidential and without stigma) available for stress.

Support for non-academic demands:

- Careers advice available from the outset
- Clarity expectations to staff members to address any unfair expectations of students

SKILLS DEVELOPMENT

- Addressing **professionalism** by highlighting the link between what they're learning with being a good doctor – reduces the clash between studying to be a good doctor, and studying just to pass exams.
- Education on **fitness to practice issues** to prevent fear of accessing help when needed
- **Tailored group work** can help to create a positive learning experience for students.

WORK-LIFE BALANCE

- Education around wellbeing – social support, eating well, exercising and getting enough sleep.
- Advising students on how to manage their time and the benefits of activities outside the course may help students to deal with managing the practicalities of life alongside studying.
- Some students suggested incorporating a reading week or a half day set aside to give them a chance to catch up with work, study, socialise or spend time on other activities.
- On site drop-in services (e.g. bank) could be arranged.
- Fixed scheduling to minimise gaps between lectures, and giving advance knowledge of

placements to allow students to plan their time effectively.
- Clarify who students' tutors are, and the role they will play in their support.
- Other channels of support, such as medical society newsletters provide a vital channel between students and staff.
- Consideration of scheduling to prevent excessive travelling, particularly long-distances at unsociable hours, when safety could be an issue

Figure 7: Suggested solutions/strategies arising from focus groups

If you want to think about solutions in more depth, you might find it helpful to look at the matrix overleaf (figure 8) that details the solutions in relation to different areas. There aren't solutions to every problem, and the matrix is merely a prompt for ideas.

Figure 8: Suggested solutions/strategies arising from focus groups

	Medical School Culture	Curriculum Management	Supporting Students
Academic Pressures	**Feedback** A supportive learning environment should provide timely response to educational effort; providing ongoing and feedback and prompt exam mark.	**Exams** Ensuring exams are scheduled to allow students time to adequately prepare can relieve some pressure. Providing access to practice papers along with small-group learning help students feel more prepared.	**Amount of knowledge required** Students feel that they can never know enough and feel pressure to learn as much as possible. Students need advice on what to study and in how much detail.
	Learning Objectives Ensuring students are given relevant and explicit learning objectives may help alleviate some of the uncertainty as to what to study.	**Learning styles** Providing students with a range of learning styles and delivery modes may help students to feel supported with their learning.	
Non academic demands	**Futures** Some students begin thinking about their futures from year one; students should be provided with accurate careers advice from the outset to help them navigate the system effectively.	**Scheduling** Providing a fixed timetable to minimise the gaps between lectures and as well as informing students of their placements well in advance , allows students to more effectively plan their time.	**Competition** Students should be educated about the additional stress that competition can cause, so that students are cooperative with their peers rather than set in competition for their learning.
	Consultants as teachers/ treatment by seniors Some medical schools have a negative and uncaring culture leaving students feeling under-valued and not respected. Ensuring students and consultants know what is expected may help to address some of uncertainty faced by students and some of the unfair expectations of consultants.	**Professionalism** Highlighting to students the link between what they're learning with being a good doctor may help reduce the clash between the need to be a good doctor and the need to study to pass exams. Advice with regard to appropriate behaviour and expected work wear could be of further help.	
		Fitness to practice Students need educating about the issues surrounding fitness to practice to prevent a fear of accessing help when needed.	

Work-life balance	**University support** Student support is vital for the wellbeing of students; academic support, individual personal support and tailored group work can all help to create a positive learning experience for students. The students would benefit from the clarity of who their tutors are and the role they will each play in their personal support. Other channels of support, such as Med Soc and Med Soc newsletters also provide a vital channel between students and staff.	**Short holidays** Some students suggested incorporating a reading week or a ½ day set aside to give them a chance to catch up with work, study, socialise or spend time on other activities.	**Educational Isolation** Many students feel they need to spend all of their time studying and as such they need educating in the benefits of having activities away from the course.
		Lack of available time Students accept that they will have little time to pursue activities, however frustration sets in when scheduling makes this even harder. On site drop-in services (Bank, Dr etc) could also be arranged.	**Lack of time** Advising students how to manage their time may help students to deal with managing the practicalities of life alongside studying.
		Travel Consideration of scheduling to prevent excessive travelling and travelling a long way at unsociable hours when safety could be an issue, may help reduce travel issues.	
Financial		**Available time and income** Planning timetables to ensure students have usable blocks of time free may help free some time for students to find employment to relieve some of the financial burden students face.	**Managing course and living costs** Teaching students to manage their finances at the start of the course may help to prevent some students from getting into financial difficulty. Consideration about managing bursaries and loans.

		Cost of travel Ensuring travel reimbursements are paid quickly may help to alleviate some financial pressure.	**Cost equipment** Medical schools could help students source more affordable equipment or buy equipment in bulk, and provide E-books.

Health		**Physical demands** Medical schools need to address the poor culture surrounding managing student health. There is a need to educate students about the need to look after their health, eating well, taking exercise and sleeping sufficiently	**Guilt** Educating and allowing students time for exercising and socializing with others outside of the course may help to alleviate the guilt students feel when pursuing outside activities. Past students and Drs to share how they managed this.
			Stress Students need to be aware of the support available. Support must be confidential and with no stigma attached.

6.0 NEXT STEPS

It may be helpful for you to consider the following, to get the best use out of this report:

- What key strengths have emerged from your school's results, and how far do you agree they are strengths for your medical school?
- To what extent are you capitalising on these strengths, and how can you maintain them as strengths?
- What key areas for development have emerged from your school's results, and how far do you agree that they are areas in need of development for your medical school?
- Do the areas highlighted as in need of development fit into your medical school's future development plans?
- What actions might your medical school incorporate into its development plans to maintain areas of strength, and develop areas in need of improvement?

Final Report

The final report will be published by the GMC at the end of May, and will provide a more detailed description of the methods and results of this study.

CARDIFF UNIVERSITY WOULD LIKE TO
THANK YOU FOR YOUR SUPPORT WITH THIS PROJECT

Dr Debbie Cohen

8.6 Evaluation Survey

We are interested in your medical school's experience of taking part in our research and would be grateful if you could complete this feedback sheet.

The GMC would like to compile your feedback to enter into the final report on the study. Are you happy for your feedback to be shared with them and included in the final report?

☐ Yes, I am happy for my feedback to be shared

☐ No, I would not like my feedback to be shared

1. Did your school encounter any difficulties taking part in the study?
   If so, what were those difficulties?

2. How useful has the study been in understanding student wellbeing and support?
   (Please circle your answer)

Very useful **Not very useful**

1 2 3 4 5

Do you have any comments on the usefulness of the study?

3. Did you receive any feedback from your students on the study?
   If so, what was that feedback?

4. Has doing the survey highlighted any areas for development your school was not previously aware of?
   If so, what are those areas?

5. Do you have any advice for other medical schools that may be looking to use the survey?

6. Any other comments?