Is it all downhill from day one at medical school?

A pilot study to investigate the wellbeing of students as they progress through their medical course

Jessica Morgan, Funke Adefope, Amy Bissell, Angela Clarke, David Collins, Michaela Harvey, Ian Kear, Danielle Lednor, Anna Stubbs, Craig Brown

Brighton and Sussex Medical School

This study was undertaken by a group of third year medical students as part of their assessment for a student selective component module on holistic healing. It took six weeks from conception to completion. Each student made individual contributions, but co-operated with ideas, design and writing the project up. They demonstrated the holistic principal that the whole is greater than the sum of their parts, by being able to produce the paper in such a short time. Craig Brown was their tutor.

Summary

This paper investigates how wellbeing is affected during progression through years one to four of medical school. It used a one-time-only self-rated wellbeing question. The results obtained suggests that wellbeing may decline through medical school and confirms some previous studies that males seem to rate higher than females in wellbeing scores. This was a useful pilot tool and further surveys are now required.

Introduction

The World Health Organization describes health as a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity.[1] The adequacy of this definition has been debated, as health is a complex interplay of biological and non-biological factors with an inter-individual variability in health priorities.[2] Wellbeing is described as 'a state of being well, healthy and contented' and as a state of feeling healthy and happy.[3, 4] It is about the connection between mind, body and spirit.[5, 6]

There have been many studies into doctors' health over the years with stress levels shown to be higher than similar professional groups.[7] Studies of medical students' health have indicated a decline in all markers of health throughout the length of their course which may continue into their early years as a junior doctor.[8] The reasons are thought to be that a medical degree encompasses heavy workload, academic pressures, a competitive environment, limitations on time, loss of leisure activities and financial burden. The duration of the course – often in excess of five years – and the recent addition of tuition fees are only likely to compound these factors further.[9] It has been suggested that women may perform lower academically due to time constraints imposed on them from outside social commitments.[10]

Self-rating of health is a useful method of assessing individual health.[11] Self-rated health status (SRHS) has been shown to be a reliable measure of objective and subjective health.[12, 13] It has been extensively studied in older populations and there are some studies where this has been applied to a student population.[14] In a survey of students across universities in three European countries, it became apparent that when questioned about what contributed more to their SRHS, students were found to place the most importance on psychological issues, psychosomatic symptoms and behavioural factors.[15] This is in contrast to the older generation, who tend to place more significance on physical wellbeing.

The purpose of this study, using a one-time-only self-rated score, was to evaluate whether wellbeing declines with medical students at Brighton and Sussex Medical School. Areas for analysis were gender, year of study and age group of students.

Methods

Study design and sample

The data analysed in this paper was collected from medical students from Brighton and Sussex Medical School (BSMS) in years one-four during the final trimester of the academic year 2009. Year five was not analysed as it was too dispersed and it would have made collecting the data difficult over a short time.

Participation was voluntary using a self-administered questionnaire distributed at the beginning of one of the timetabled lectures. Each year group was targeted within a ten-day period. At the beginning of the lecture they were given a brief outline of the aims of the study, and asked to mark on the self-rated scale how they would rate their wellbeing on a scale of 0–10 with the specific instructions below:

'As part of our SSC holistic healing, we are conducting a pilot study about medical students' wellbeing. To help us with our study, you have been given a piece of paper with one question on which we would like you to answer as honestly as you can. It will be anonymous. All we need to know is your age, year of study and gender.

Once you have marked your wellbeing on the piece of paper, please pass the questionnaires to the end of the rows for collection. Thank you for your help.'

The papers were gathered and any left behind collected at the end of the lecture.

Measures

The self-rated health scale used in other surveys was modified from a previous survey that had used a scale of 0–5 (15). A scale of 0–10 was used and the word 'wellbeing' was substituted for 'health' (see Figure 1).

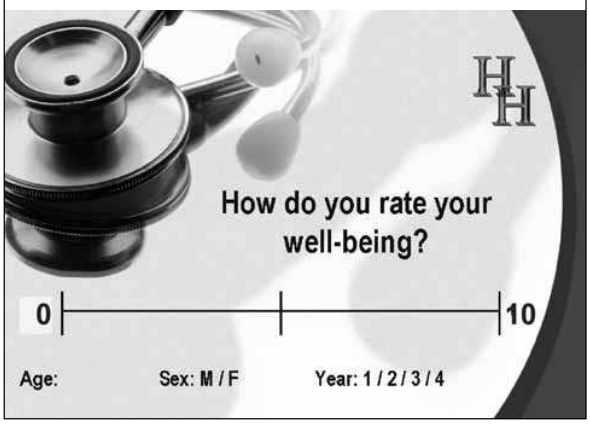
The questions were collected and recorded on statistical package for the social sciences (SPSS), where comparisons were made for:

- year of medical school and wellbeing
- gender and wellbeing
- year age group and wellbeing.

Statistical analysis

Descriptive statistics were performed using tabulations and chi squared to compare year group and wellbeing, gender and wellbeing, and finally, age group and wellbeing. An analysis of variance (ANOVA) was performed to assess the significance between wellbeing rating and each individual year group. An independent T-test was used to compare the mean wellbeing rate for gender, different age groups and different year groups.

Figure 1. Wellbeing question



Results

Description of the sample

The sample of BSMS students was predominantly female (61.9%) and the mean age was 22. The sample sizes for each year were:

- 1st year – 116 out of a total year group of 143 students (81%)
- 2nd year – 114 out of a total year group of 140 students (81%)
- 3rd year – 73 out of a total year group of 123 students (59%)
- 4th year – 62 out of a total year group of 120 students (50%)

The ages ranged from 18- to 42-years-old. Students were taken from years one–four inclusive.

Analysis

A one-way ANOVA was performed to assess the significance between the four year groups and the wellbeing ratings. A significant p-value of 0.04 was obtained. When comparisons were made between individual years using an independent T-test, no significant difference was seen.

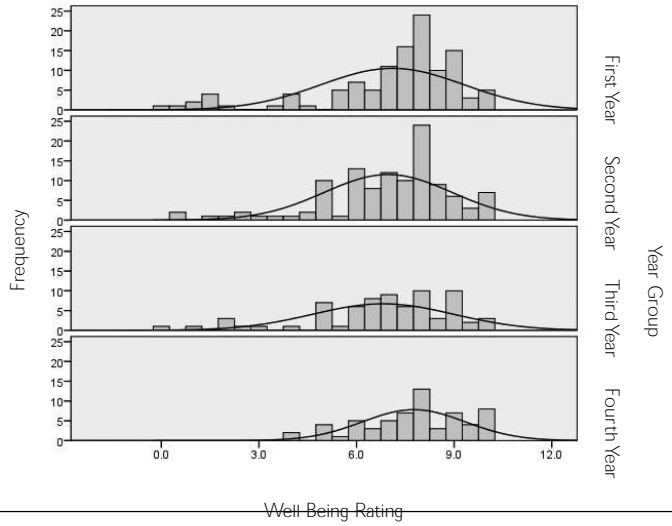
Table 1 Wellbeing rating for medical students at BSMS years 1–4, in academic year 2008/2009

Wellbeing rating			
Year Group	Mean	N	Std. Deviation
First Year	7.103	116	2.1993
Second Year	6.969	114	1.9725
Third Year	6.815	73	2.1691
Fourth Year	7.758	62	1.5831
Total	7.115	365	2.0449

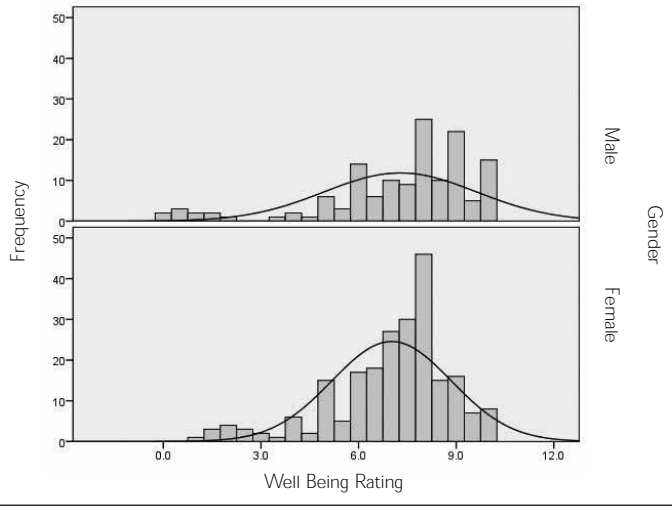
Gender and wellbeing

The mean wellbeing rating for males was 7.28, and for females was 7.01. Comparisons were made between gender and wellbeing ratings using an independent T-test which resulted in a significant p-value of 0.01.

The wellbeing ratings with a distribution curve for BSMS students from years 1–4 for the academic year 2008/2009



The wellbeing ratings for male and female BSMS students for the academic year 2008/2009



Age group and wellbeing

Comparisons between age group and wellbeing showed no statistical significance (p-value = 0.887).

Discussion

Method

In previous self-rated health studies the question used was 'How would you rate your health in general? It was felt 'wellbeing' is a better word for a younger population as emotional and psychological dimensions are more important in determining health and wellbeing in this group, whereas in an older population disease and function affect it more. However using a different word may make comparisons with other studies difficult.

Using a 0–10 scale has advantages over scale that uses 0 (poor) to 5 (excellent) as it gives a broader range of response yet can still be used for comparison. There may be a case for marking the numbers on the 1–10 scale to give more accurate scoring and it would make the recording of the data easier.

The sampling of the students could have been performed using a postal or email questionnaire, but it was felt this would have produced a poor response rate, may infringe confidentiality and would involve a lot more time following up non-responders. Choosing to be present at a lecture that had a high attendance gave a high sample rate for a one-off survey.

This study does not include any information on year five students. The reason for this is that they have limited time together as a cohort during their final year. Additionally, this study was conducted near the end of the academic year therefore the fifth year students were already involved with their final examinations. Given more time it may have been possible to collect data from this year, however the method used to obtain the data would have been significantly different from the method used for the other years.

Results

The study does show a deterioration of wellbeing from year one through year two and year three but with an improvement in year four. It also shows that male students rate themselves to have a higher wellbeing than females. When interpreting this data, significant results were shown using a one-way ANOVA test, which looked at the difference between wellbeing across all years. However when individual analyses were conducted, non-significant results were obtained.

There are some factors in sampling, which may be specific to this medical school. First and second year medical students are regularly registered for their attendance, therefore most of these year groups (81%) would have been present on the day of sampling. However,

third and fourth years are not registered, therefore the numbers of students attending on the day of sampling could not be guaranteed. It could be argued that factors associated with wellbeing may actually influence the number of students attending for their lectures and so bias to higher scores of wellbeing. The numbers collected for third and fourth years (59%, 50%) were not substantial to produce significant results using T-tests. Also many students as a whole find the third year more stressful and time-consuming than the fourth year and may account for the wellbeing score being higher than predicted in year four.

> Overall males showed greater ability to maintain wellbeing than females

On the day of data collection all four years had varying factors, which may have influenced how they marked their questionnaire. The first years had an impending test and the fourth years had just handed in their research projects. The third year students at BSMS are divided into four groups who study different modules throughout the year. As such, on the day of sampling they would have had different stressors and pressures affecting their possible scoring on the scale. This issue could be overcome by multiple sampling throughout the year to gain an average wellbeing of each student throughout the year.

To obtain a higher response rate at BSMS a survey could be repeated at the same time each year for several years, or an ongoing survey to follow students through each year could be done. Recruiting other medical schools would also give a larger sample and national picture of medical students wellbeing.

Conclusion

This pilot study showed that student wellbeing was higher in males than females and generally reduced through the duration of years one and two. Year three again showed a general decline but this was unsubstantiated on T-test due to sample size. Year four showed an upward trend in wellbeing which again was unsubstantiated on T-test due to sample size. This result was in favour of the null hypothesis. Overall males showed greater ability to maintain wellbeing than females, a factor confirmed by the studies of Ben-Zur and Lee & Graham.[16] Further evaluation of these populations is required with possibly multiple assessments during the course of the years to establish a year average and investigate how fluctuations in workload affect wellbeing in order to reduce selection bias. Collaboration with BSMS by registering sessions due to be targeted by the study may help to get the required response rate in order to evaluate the statistics across the full five years of the course.

As for the title question, it is not so much 'downhill all the way after entering medical school' but more of 'a rollercoaster ride' with perhaps a lower wellbeing score at the end of medical school than at the beginning. It would be useful to have larger sample sizes using other medical schools to investigate the subject of students' health using self-rated health scores. If it is demonstrable that students' wellbeing does deteriorate through medical school, and many of the contributing factors are already known, it should be possible to put some interventions in place and test their effectiveness.

Authors' contributions

This study was undertaken by a group of third year medical students as part of their assessment for a student selective component module on holistic healing. It took six weeks from conception to completion. Each student contributed individually, but it was also an exercise in co-operative group work. They were encouraged to reflect on their roles in the group, and were able to demonstrate a holistic principal 'that the whole is greater than the sum of their parts.'

References

1 Constitution of the World Health Organization. Forty-fifth edition, Supplement. 2006. 45th ed.

2 Saracci R. The World Health Organization needs to reconsider its definition of health. *BMJ 1997*; 314: 1409.

3 Oxford English Reference Dictionary. Oxford: Oxford University Press, 1996.

4 Cambridge International Dictionary of English. Cambridge: Cambridge University Press, 2002.

5 Chopra D. *Quantum Healing*. London. Bantam 1989.

6 Seigel B. *Love, medicine and miracles*. New York: Harper Perennial, 1986.

7 Firth-Cozens J. Doctors, their wellbeing and their stress. *BMJ 2003*; 326: 670–1.

8 Thomas N K. Resident burnout. *JAMA 2004*; 292 (23): 2880–2889.

9 Guthrie EA, Black D, Shaw CM, Hamilton J, Creed FH & Tomenson B. Psychological stress in medical students: a comparison of two very different university courses. *Stress Medicine 1997*; 13; 179–184.

10 Lee J, Graham AV. Students' perception of medical school stress and their evaluation of a wellness elective. *Medical Education 2001*; 35: 652–659.

11 Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *Health Soc Behav 1997*, 38 (1): 21_37.

12 Maddox GL, Douglass EB. Self-assessment of health: a longitudinal study of elderly subjects. *Journal of Health and Social Behaviour 1973*; 14 (1): 87–93.

13 Lundberg O, Manderbacka K. Assessing reliability of a measure of self-rated health. *Scand J Soc Med 1996*; 24 (3): 218–224.

14 Lonka K, Sharafi P, Karlgren K, Masiello I, Nieminen J, Birgegard G, Masiello I, Josephson A. MED NORD – a tool for measuring medical students well-being and study orientations. *Medical Teacher 2008*; 30; 72–79.

15 Mikolajczyk RT, Brzoska P, Maier C, Ottova V, Meier S, Dudziak U, Ilieva S & El Ansari W. Factors associated with self-rated health status in university students: a cross-sectional study in three European countries. *Biomed Central Public Health, 2008*; 8 (215): 1–10.

16 Ben-Zur H, Zeidner M. Gender differences in coping reactions under community crisis and daily routine conditions. *Personality and Individual Differences 1996*; 3; 331–34.