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Satisfaction with life and depression among medical students in Auckland, New Zealand

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Abstract

Aim The aim of this study was to assess the satisfaction with life among undergraduate medical and other students in Auckland and identify associations with depression and anxiety disorders.

Methods The study was conducted at The University of Auckland, New Zealand in 2008 and 2009. The sample population was derived from five undergraduate classes in four courses (medicine (two classes), nursing, health science and architecture). A battery of questionnaires including the Satisfaction with Life Scale (SWLS), Patient Health Questionnaire (PHQ) for depression and Generalised Anxiety Disorder Questionnaire (GAD) were administered to the cohort. Subgroup analysis between medical and other students were also carried out.

Results A total of 778 students were eligible, and 594 (76.4%) students (255 medical, 208 health science, 36 nursing and 95 architecture) completed the questionnaire. The median age was 20 years (range 17-45) and women represented 67.2% (n=399) of the total group. The mean SWLS score for the total group was 24.9 (SD 6.4), with medical students on average having higher satisfaction with life compared to other students. The rate of depression (PHQ $\geq$ 10) and anxiety (GAD score $\geq$ 8) among medical students was 16.9% (95% CI 12.2-21.5) and 13.7% (95%CI 9.5-18.0) respectively. Female students had higher rates of depression and anxiety compared to males. A statistically significant moderate correlation between SWLS score and PHQ score [r = -0.37 ($p<0.001$)] and SWLS score and GAD score [r = - 0.23 ($p<0.001$)] were also observed.

Conclusions Medical students are more satisfied with life compared to other students. A significant proportion of students surveyed in this study have clinically significant depression and anxiety. Promoting positive wellbeing and improving satisfaction with life may enhance the quality of life as well as the social and academic performance of university students.

Satisfaction with life is an important contributor to the quality of life and subjective wellbeing.[1, 2] Even though it is a broad and non-specific subjective perception, life satisfaction is a predictor of mortality[3] as well as psychiatric morbidity.[4] Furthermore, life dissatisfaction has a significant effect on the long-term risk of suicide in the general adult population.[4] Subjective wellbeing also impacts on a person's ability to function and thus predicts subsequent work disability among healthy adults.[5]

University students are increasingly recognised as a population group experiencing stressors that can contribute to psychological disorders.[6] The academic demands and lifestyle choices, easy access to alcohol and other substances[7] as well as minimal adult supervision are some of the contributing factors.

Medical students in particular are a subgroup of students with a significant level of stressors during undergraduate training.[8] The aim of this study was to assess the satisfaction with life among undergraduate medical and other students in Auckland and identify associations with depression and anxiety disorders.

Method

The study was conducted at The University of Auckland, New Zealand in 2008 and 2009. The surveyed medical students were from two third year classes (2008 and 2009 cohort). This was the final preclinical year in the programme and the students were starting to get clinical exposure through their weekly visits to the wards.

A sample of other undergraduate students was also surveyed from nursing, health science and architecture courses in 2009. These students were also in the third year in their respective courses, which was the final year for the nursing and health science students and the final basic training year for the architecture students in their two tiered programme. There were no exclusion criteria for participation in the study.

The five item Satisfaction with Life Scale (SWLS) developed by Diener et al[9] was used to measure the participants' life satisfaction. Other questionnaires including the Patient Health Questionnaire[10] (PHQ) for depression and Generalised Anxiety Disorder Questionnaire[11] (GAD) were administered to the whole class of the selected course year groups at the beginning of a lecture with prior consent of the lecturers and participants. Ethical approval for this study was granted by the Northern Regional Ethics Committee (NTX/07/05/038).

Demographic details and the scores for the above questionnaires were recorded for the responded students. Subgroup analyses between medical and other students were also carried out. The unpaired *t*-test was used for comparing subgroups. Proportions between groups were compared using the chi-squared test. Pearson correlation was used to quantify associations between SWLS, PHQ and GAD scores. The 95% confidence intervals (95% CI) were calculated for prevalence rates. The reported differences were significant at p value <0.05. The analyses were carried out using Statistical Package for the Social Sciences 2010 (SPSS for Windows, release 19.0.0, IBM Corporation, Somers, NY, USA).

Results

Description of study sample—A total of 778 students were eligible, and 594 (76.4%) students (255 (80.7%) medical, 208 (77.6%) health science, 36 (50.0%) nursing and 95 (77.9%) architecture) completed the questionnaires. The median age was 20 years (range 17-45) and women represented 67.2% (n=399) of the total group. A statistically significant difference ($p<0.0001$) was observed in the gender between medical and other students, which was caused by the disproportionate number of female students in health science (81.7%) and nursing (91.7%) classes. A significant difference in the rate of New Zealand-European students between medical and other students was observed as a result of the health science class having a low number of students of that ethnicity (26.9%). Other characteristics were similar in the two sub groups.

Table 1 summarises the demographic details of the participants.

Table 1. Demographic details of the participants

Variables		Medical students n = 255	Other students n = 339	Total group n=594
Age [Median (range)] in years		20 (18-36)	20 (17-45)	20 (17-45)
Women % (n)		51.8 (132)	78.8 (267)*	67.2 (399)
Ethnicity	NZ European % (n)	45.1 (115)	36.0 (122)*	39.9 (237)
	NZ Māori % (n)	5.9 (15)	9.4 (32)	7.9 (47)
	Pacific Island % (n)	4.7 (12)	5.3 (18)	5.1 (30)
	Asian % (n)	39.6 (101)	44.0 (149)	42.1 (250)
	Other % (n)	4.7 (12)	5.3 (18)	5.1 (30)

* Statistically significant difference between medical students and other students group (p<0.05).

Satisfaction with life, depression and anxiety—The mean SWLS score for the total group was 24.9 (SD 6.4). Table 2 summarises the mean scores for the three questionnaires and table 3 provides a breakdown of the SWLS categories for medical and other students. In the total surveyed sample, the rates of depression and anxiety were 20.7% (95%CI 17.4-24.0) and 20.0% (95%CI 16.8-23.3) respectively.

Medical students had an average SWLS score of 26.4 (SD 6.4), which is within the range for being satisfied with life (see Table 3). The rate of depression (PHQ score ≥ 10) among medical students was 16.9% (95% CI 12.2-21.5). Significant anxiety symptoms (GAD score ≥ 8) were present in 13.7% (95%CI 9.5-18.0) of medical students.

In subgroup analysis, medical students on average had a higher level of satisfaction with life. Medical students overall had a lower rate of depression compared to others (16.9% vs 23.6%; p=0.045). The rate of anxiety was also less in medical students than other students (13.7% and 24.8%; p=0.001).

In gender groups analysis, there was no difference in the SWLS scores between female and male students, however females had a significantly higher rate of depression (23.6% vs 14.9% in males; p=0.01) and anxiety (22.8% vs 14.4% in males; p=0.02). There was no difference between the rate of depression among female medical students compared to other female students (20.4% vs 25.1%; p=0.15).

Table 2. Average scores for total group, medical students and other students

Scale	Medical students n = 255	Other students n = 399	Total group n = 594
SWLS mean (SD)	26.4 (6.4)	23.8 (6.2)*	24.9 (6.4)
PHQ mean (SD)	5.6 (4.2)	7.0 (4.9)*	6.4 (4.7)
GAD mean (SD)	4.1 (3.8)	5.2 (4.7)*	4.8 (4.4)

SWLS = Satisfaction with Life Scale.

PHQ = Patient Health Questionnaire for depression.

GAD = Generalised Anxiety Disorder Questionnaire.

SD = Standard deviation.

* Statistically significant difference between medical and other students (p<0.05).

Table 3: Rates of satisfaction with life categories in medical and other students

SWLS Categories (score)	Medical students (%)	Other students (%)
Extremely satisfied (35-31)	27.8%	11.2%*
Satisfied (26-30)	36.5%	33.6%
Slightly satisfied (21-25)	16.5%	29.8%*
Neutral (20)	3.9%	5.9%
Slightly dissatisfied (15-19)	12.2%	10.9%
Dissatisfied (10-14)	2.4%	7.4%*
Extremely dissatisfied (5-9)	0.8%	1.2%

SWLS = Satisfaction with Life Scale.

* Statistically significant difference between medical and other students ($p<0.05$).

Regression analysis revealed a statistically significant moderate correlation between SWLS score and PHQ score [$r = -0.37$ ($p<0.001$)] and SWLS score and GAD score ($r = -0.23$ [$p<0.001$)]. Cronbach's alpha coefficient for the five parts of the SWLS was 0.89, indicating good reliability and internal consistency of the SWLS scores.

Discussion

This study aimed to assess the satisfaction with life among undergraduate medical students and identify associations between depression and anxiety. The study also compared the satisfaction with life among medical and other students. In the sampled University of Auckland population, 15.4% of medical and 19.5% of other students reported dissatisfaction with life. These students were more likely to have depression and/or anxiety compared to students who reported to be neutral or satisfied with life. A significant proportion of students were also found to be having clinically significant depression and anxiety symptoms.

An interesting finding of this study is that medical students had a higher mean SWLS scores compared to other students surveyed. One possible explanation for this is the greater career and job certainty in medical students.

The survey was carried out during the 2007-2010 financial crisis, where job opportunities were limited for many university graduates including health science and architecture graduates; majority of the non-medical students in this study were doing these two courses.

The uncertainty of getting into a limited entry course after the undergraduate degree may have also contributed to the lower SWLS scores in health science students. Alternatively, higher life satisfaction among medical students may be caused by the fact that they are already accepted into their desired programme. Another explanation is that the selection process of students into the medical programme from the premedical courses (including health sciences) results in selection of students with better mental health and coping strategies.

The results also suggest that poor mental wellbeing is common to all tertiary students rather than limited to medical students alone. This is in line with other researchers[12] and was highlighted by a recent study of tertiary students in Adelaide, Australia which

found that students from non-health disciplines were significantly more distressed than health disciplines[13].

The overall rate of depression among medical students was lower than other students in our survey. However this is most likely to be due to the significantly lower number of female students in the medical students group compared to the other students surveyed. There was no difference in the rate of depression among female medical students compared to other female students. The rate of depression among female students overall was significantly higher than the male students and this is in accordance with the rates from the general population[14].

A strength of this study is that it was conducted in a large group of students at a similar stage of their undergraduate courses allowing comparison between subgroups. The high response rate (76.4%) was achieved by administering the questionnaire at the start of lectures and the study investigators being present to encourage students to complete the questionnaire.

The inclusion of a large sample of medical students allowed comparison between medical and other students. The lack of random selection and wider sampling of students is a shortcoming and prevents the authors from making strong conclusion on the mental health among medical students compared to other university students as a whole; however resources of the project were limited.

Acute stressors (such as upcoming assignments, tests or exams) may have contributed to some of the reported SWLS scores. Re-administering the questionnaire to the same group of students at different times of the year to use the individual students as their own control would have eliminated the impact of acute stressors on the scores.

The SWLS scores in The University of Auckland sample are very similar to other literature on undergraduate students.[1] A study of American college students found a mean SWLS score of 23.7 (SD 6.4).[15] The association between SWLS scores and depression in medical students was assessed by Swami et al, and the results ($r = -0.38$) are very similar to our study.[16]

The rates of depression and anxiety in our sample are similar to the New Zealand population rates for the 16 to 24 years age group (20.7% and 23.9% for mood and anxiety disorders respectively)[17] and other literature on university students.[18]

In conclusion, dissatisfaction with life is associated with depression and anxiety. One possible way of reducing the depressive and anxiety symptoms in university students is to promote positive wellbeing and improve satisfaction with life. The results further emphasise the evidence required for developing frameworks for identifying and prioritising interventions for students who are suffering from mood disorders and dissatisfaction with life.

Competing interests: None.

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References:

1. Diener E, Pavot W. Review of the Satisfaction With Life Scale. In: Michalos AC, Diener ED, Glatzer W, et al., eds. Assessing Well-Being: Springer Netherlands, 2009:101-17.
2. Headley BW, Kelley J, Wearing AJ. Dimensions of mental health: life satisfaction, positive affect, anxiety and depression. Soc Indic Res. 1993;29(1):63–82.
3. Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. J Health Soc Behav. 1997;38(1):21-37.
4. Koivumaa-Honkanen HT, Honkanen R, Viinamäki H, et al. Life satisfaction and suicide: a 20-year follow-up study. Am J Psychiatr. 2001;158(3):433–9.
5. Koivumaa-Honkanen HT, Koskenvuo M, Honkanen R, et al. Life dissatisfaction and subsequent work disability pension in an 11-year follow-up. Psychol Med. 2004;34(2):221–8.
6. Eisenberg D, Gollust SE, Golberstein E, et al. Prevalence and correlates of depression, anxiety, and suicidality among university students. Am J Orthopsychiatry. 2007;77(4):534-42.
7. Webb E, Ashton CH, Kelly P, et al. Alcohol and drug use in UK university students. Lancet. 1996;348(9032):922-5.
8. Hennning MA, Hawken SJ, Hill AG. The quality of life of New Zealand doctors and medical students: what can be done to avoid burnout? N Z Med J;122(1307):102-10.
9. Diener E, Emmons RL, Larsen RJ, et al. The satisfaction with life scale. J Pers Assess. 1985;49(1):71-5.
10. Spitzer RL, Kroenke K, Williams JB. Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. JAMA. 1999;282(18):1737-44.
11. Spitzer RL, Kroenke K, Williams JB, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med 2006;166(10):1092-7.
12. Andrews B, Wilding JM. The relation of depression and anxiety to life-stress and achievement in students. Br J Psychol. 2004;95(4):509–21.
13. Leahy CM, Peterson RF, Wilson IG, et al. Distress levels and self-reported treatment rates for medicine, law, psychology and mechanical engineering tertiary students: cross-sectional study. Aust N Z J Psychiatry. 2010;44(7):608-15.
14. The MaGPIe research group. The nature and prevalence of psychological problems in New Zealand primary healthcare: a report on Mental Health and General Practice Investigation (MaGPIe). N Z Med J. 2003;116:U379.
15. Pavot W, Diener E. The affective and cognitive context of self-reported measures of subjective well-being. Soc Indic Res. 1993;28(1):1-20.
16. Swami V, Chamorro-Premuzic T, Sinniah D, et al. General health mediates the relationship between loneliness, life satisfaction and depression. A study with Malaysian medical students. Soc Psychiatry Psychiatr Epidemiol. 2007;42(2):161-6.
17. Oakley Browne MA, Wells JE, Scot KM. Te Rau Hinengaro: The New Zealand Mental Health Survey. Wellington: Ministry of Health, 2006.
18. Dahlin M, Joneborg N, Runeso B. Stress and depression among medical students: a cross-sectional study. Med Educ. 2005;39(6):594-604.