

Subjective well-being and its correlates among students of a medical college in Kolkata, West Bengal: A cross-sectional study

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Abstract: *Introduction:* Subjective well-being (SWB) is known to have tremendous influence on physical and mental health. Subjective well-being of medical students who undergo a rigorous and stressful academic activity in India, is important issue of research. The study was aimed to assess the SWB of medical students in the eastern part of India and its correlates. *Methods:* A cross-sectional study was conducted among 166 students of a medical college of Eastern India during December, 2019 to March, 2020. SWB was assessed using WHO-5 well-being index. The respondents were enquired about their individual characteristics, perceptions and certain behaviors. Bivariate analysis was used to examine association between SWB and its correlates. *Results:* Nearly 60% of the participants were male (99, 59.6%); mean age of the participants were 19.8 (SD: 1.2) years. Almost four out of ten respondents had poor subjective well-being. SWB was positively associated with perceived SES and perceived family support. Mean standardized well-being score was significantly higher among participants who underwent regular physical exercise; who had higher frequency of exposure to humor; had been appreciated for any accomplishment; had felt real emotions like love and shared fondness/love through hugging or shaking hands in last 2 weeks. *Conclusions:* A considerable proportion of students had poor subjective well-being and physical exercise, appreciation and inculcating positive emotion might improve the situation.

Keywords: Analysis of Variance, Exercises, Happiness, Medical, Students, Subjective, WHO-5, Well-being.

Introduction

Subjective well-being refers to how people experience and appraise their lives and specific domains and activities in their lives [1]. The constructs may be assessment of real-time experience and response thereto, emotional state on one end (short-term), and overall evaluation of life satisfaction, purpose of life and suffering in life at the other end (long-term) [1]. The affective experiences and overall emotional well-being are considered to be crucial to quality of life [2].

A number of objective benefits of subjective well-being were reported by the researchers. It includes reduced inflammation and infection, improved function of cardio-vascular, immune and endocrine system, increased speed of recovery from diseases and enhanced survival and longevity in physical health, increased productivity, improved performance, reduced absenteeism, increased creativity, cognitive

flexibility, cooperation and collaboration, reduced risk taking, pro-social behavior, sociability and social relationship in affective and social domains [3].

Globally, medical education system is considered as one of the most stressful academic activity. In addition to coping with the normal stress of everyday life, medical students must deal with high academic workloads, exposure to patients' suffering and death, witnessing patients' families suffering trauma, and pressure from their own families to succeed. Indian situation is not much different. Academic stress is recognized as one of the important factor affecting the subjective well-being of a student [4-6].

An individual with a better subjective well-being is more likely to survive the grinding effect of medical education unscathed, likely

to be a better physician, likely to be a better academician and thus are likely to fulfill the role of an Indian Medical Graduate as envisaged by NMC better [7]. Not only academic activity, well-being is related to health outcomes as well. A meta-analytical study involving 150 studies on well-being revealed that well-being was positively related to short-term health outcomes, long-term health outcomes, and disease or symptom control [8]. It is thus imperative for a medical student to maintain high level of subjective well-being. This will be helpful for the student to deal with the academic stress as well as in leading a healthy life [8].

Studies on well-being index, revealed certain social and behavioral factor to be associated with the subjective well-being of an individual. Positive emotions were found to be statistically significantly associated with subjective well-being. Positive emotions included perceived support from family members, peer groups, being appreciated for certain activities, sharing resources with others. Additionally, regular participation in moderate to vigorous physical activity (e.g. cycling, jogging etc.) also found to be associated with high well-being score. Scholars have also argued that ability to express one's feelings (fondness/love) easily also had association with higher subjective well-being [9-18].

Despite their great importance associated with medical education, very few studies actually have been done on subjective well-being in this part of India. This study aims to assess the level of subjective well-being and its correlates among students of a medical college in Kolkata.

Material and Methods

This descriptive, cross-sectional study was conducted among the medical students of a Medical College in Kolkata during December, 2019 - March, 2020. Two year-batches out of the five year-batches, enrolled in the College, were chosen using simple random sampling and all students of these two batches were approached with an online questionnaire. Students appearing in the university examination were excluded.

The shared questionnaire has three components – in the first component demographic and socio-economic characteristics of respondents were

enquired; the second component contained six questions on activities which may have association with positive emotions and the third component contained the WHO-5 well-being index [19]. Appreciating students' difficulties in revealing parental income, during the pilot testing of the questionnaire, students were asked to rate their perceived socioeconomic status in a 5 point likert scale, the options being poor, almost poor, just getting by, living comfortably and very well off [20].

Respondents were asked about their perception regarding the family support they receive. It was a Yes-No question. For assessment of other activities related to positive emotion, respondents were asked the following questions in the second component of the questionnaire - frequency of laughing seeing, reading or discussing any funny thing/event/ character in last 2 weeks; frequency of being appreciated at home/ college/ elsewhere for any accomplishment in last 2 weeks; frequency of helping others by sharing your resources (including knowledge and belongings) in last 2 weeks; frequency of really feeling emotions like love, affection, belonging in last 2 weeks; frequency of sharing your fondness/love through hugging or shaking hands.

Frequency of moderate to vigorous intensity physical activity was assessed by asking the frequency of doing activities involving physical exercises (like playing outdoor games, jogging, running, brisk walking, dancing, yoga, cycling etc.) for at least 30 minutes in a day in last 2 weeks. Options for answering these questions were as follows - all 7 days in a week, 5 days or more in a week, 3-4 days in a week, 1-2 days in a week or not done.

Subjective well-being of the students were assessed using WHO-5 well-being index [19]. This instrument had five positively worded statements. Responses to these questions were as follows - at no time; some of the time; less than half of the time; more than half of the time; most of the time and all of the time. Score of the responses ranges from 0 for at no time to 5 for all of the time. So, the possible

raw score for the WHO-5 well-being index ranges from 0-25. It is recommended to multiply by 4 for converting the raw score into standard score, ranging from 0-100. Though the original survey did not recommend any cut-off value for dichotomising the outcome; since then multiple articles were released with a cut-off value of 50 for the standard score. Anyone scoring more than 50 in the standard score were considered as an individual with better well-being; and score less than or equal to 50 were considered as poor well-being [21]. The same criteria was used in this study.

Responses of the online questionnaire were downloaded in a spreadsheet format. It was checked for duplicate or multiple entries by tracking the email address. The data were then cleaned and prepared for analysis in R, an open source statistical software [22]. Quantitative data were expressed as mean (SD) and median (IQR); depending on the distribution of the variable.

Qualitative data were expressed in frequency and percentage. Difference in the mean among the groups were tested using independent sample t-test (for two groups) or ANOVA (for 3 groups or more). Homogeneity of variance assumption for these test were checked using levene's test. $p < 0.05$ was considered statistically significant.

Results

Out of the 206 students in the two batches previously mentioned, 176 students were eligible for the study as per the inclusion and exclusion criteria. 166 students ultimately completed the questionnaire; 3 students refused consent and others did not fill in. So, the response rate was 96.0%.

Among the respondents, more than half of the participants (94, 56.6%) were from 1st semester (i.e., 2019-20 batch). Nearly 60% of the participants were male (99, 59.6%) and highest proportion of participants belong to age group of less than 19 years (73, 43.9%).

Mean age of the participants were 19.8 (SD: 1.2) years. None of the respondents reported that they perceived their family as poor whereas more than

three-fourth of them (131, 78.9%) perceived themselves as living comfortably. Ninety six (96, 57.8%) of the respondents reported that they feel happy or very happy.

There was no statistically significant difference among the mean standardized well-being score according to categories of age, gender and parental education. However, perceived socio-economic status and perceived level of happiness had dose-response relationship with standardized well-being score; higher score being in case of perceived higher socio-economic status and higher level of happiness. [Table-1] On further analysis, it was noted that level of happiness had significant correlation with standardized well-being score (Spearman's $\rho = 0.349$; $p = 0.000004$).

Mean (95% C.I.) and median (IQR) of the standardized well-being score was 51.6 (48.5 – 54.7) and 56.0 (44.0 – 64.0) respectively. Responses to the different WHO-5 well-being index items were shown in table 2. Nearly 60.0% of the respondents (99, 59.6%) obtained > 50 standardized well-being score in WHO-5 well-being index.

Mean standardized well-being score was significantly higher among participants who underwent physical exercise for more than 30 minutes a day on more than three days a week than those who did not. Similarly, participants with higher frequency of laughing seeing, reading or discussing any funny thing/event/character, having appreciated for any accomplishment, feeling real emotions like love and sharing fondness/love through hugging or shaking hands in last 2 weeks were more likely to have significantly higher mean standardized well-being score (Table 3).

Although the mean standardized well-being score was higher among participants who helped by sharing resources including knowledge and belongings than who did not, the difference was not statistically significant (Welch's $F = 1.865$, $p = 0.138$).

Table-1: Distribution of WHO-5 wellbeing index score according to the background characteristics of study participants (n=166)				
Variable	Number (n)	Percentage (%)	WHO-5 wellbeing index Mean (SD)	Welch's F (p-value)
Age category(in Years)				
≤ 19	73	44.0	51.5 (19.5)	0.020 (0.981)
9-21	50	30.1	51.3 (21.5)	
> 21	43	25.9	52.1 (19.8)	
Gender				
Female	67	40.4	48.4 (24.1)	- 1.596 (0.112)* ‡
Male	99	59.6	53.8 (16.6)	
Highest Literacy status of parents				
Graduation not completed	19	11.4	47.2 (19.1)	0.666 (0.519)
Graduation completed in regular course	120	72.3	51.9 (20.8)	
Graduation completed in professional course	27	16.4	53.5 (17.6)	
Perceived financial status of the family				
Almost Poor	6	3.6	19.3 (18.0)	9.253 (0.004*)
Just Getting By	25	15.1	43.7 (11.6)	
Living Comfortably	131	78.9	54.2 (19.5)	
Very Well Off	4	2.4	64.0 (30.3)	
Perceived support of the family in case of unforeseen difficulty				
No	27	16.3	40.0 (28.0)	- 2.47 (0.019)* ‡
Yes	139	83.7	53.8 (17.4)	
Perceived level of happiness#				
Not very happy	27	16.3	33.0 (25.2)	26.664 (0.000*)
Neither happy nor unhappy	43	25.9	47.6 (19.9)	
Happy	90	54.2	57.1 (13.1)	
Very happy	6	3.6	80.7 (8.2)	
* → Homogeneity of variance rejected; #- There is no participant who reported 'unhappy' ‡ → Independent sample t-test was done				

Table-2: Distribution of responses to WHO-5 well-being index (n=166)

WHO-5 well-being items	At no time	Some of the time	Less than half of the time	More than half of the time	Most of the time	All of the time
Over last two weeks, I have felt cheerful and in good spirit	2 (1.2)	45 (27.1)	9 (5.4)	58 (34.9)	48 (28.9)	4 (2.4)
Over last two weeks, I have felt calm and relaxed	18 (10.8)	30 (18.1)	38 (22.9)	43 (25.9)	33 (19.9)	4 (2.4)
Over last two weeks, I have felt active & vigorous	4 (2.4)	37 (22.3)	27 (16.3)	38 (22.9)	55 (33.1)	5 (3.0)
Over last two weeks, I woke up feeling fresh and rested	4 (2.4)	32 (19.3)	34 (20.5)	51 (30.7)	32 (19.3)	13 (7.8)
Over last two weeks, My daily life has been filled with things that interest me	18 (10.8)	22 (13.3)	38 (22.9)	54 (32.5)	21 (12.7)	13 (7.8)

Table-3: Distribution of standardized well-being score according to different activities of study participants (n=166)

Variable	Number (n)	Percentage (%)	WHO-5 wellbeing index Mean (SD)	Welch's F (p-value)
Frequency of doing physical exercises (like playing outdoor games, jogging, running, brisk walking, dancing, yoga, cycling etc.) for at least 30 minutes in a day				
All 7 days in a week	6	3.6	57.3 (36.0)	7.589 (0.00024)
5-6 days in a week	47	28.3	57.2 (17.9)	
3-4 days in a week	24	14.5	64.5 (16.9)	
1-2 days in a week	51	30.7	48.6 (13.5)	
Not done	38	22.9	39.6 (22.1)	
Frequency of laughing seeing, reading or discussing any funny thing/event/character				
All 7 days in a week	122	73.5	49.9 (21.7)	4.333 (0.015)
5-6 days in a week	22	13.3	62.7 (12.6)	
3-4 days in a week	12	7.2	51.3 (11.8)	
1-2 days in a week	5	3.0	48.0 (16.5)	
Not done	5	3.0	47.2 (7.2)	
Frequency of being appreciated at home/ college/ elsewhere for any accomplishment				
All 7 days in a week	4	2.4	71.0 (26.0)	12.106 (0.000079)
5-6 days in a week	38	22.9	61.3 (11.9)	
3-4 days in a week	67	40.4	56.2 (18.2)	
1-2 days in a week	48	28.9	38.1 (19.3)	
Not done	9	5.4	39.6 (20.4)	

Variable	Number (n)	Percentage (%)	WHO-5 wellbeing index Mean (SD)	Welch's F (p-value)
Frequency of helping others by sharing your resources (including knowledge and belongings)				
All 7 days in a week	21	12.7	54.9 (16.6)	1.865 (0.138)
5-6 days in a week	63	38.0	54.7 (21.9)	
3-4 days in a week	60	36.1	50.0 (19.4)	
1-2 days in a week	9	5.4	50.2 (17.1)	
Not done	13	7.8	39.7 (18.5)	
Frequency of really feeling emotions like love, affection, belonging in last 2 weeks				
All 7 days in a week	60	36.1	60.4 (17.9)	5.471 (0.002)
5-6 days in a week	45	27.1	43.0 (23.2)	
3-4 days in a week	39	23.5	51.2 (14.3)	
1-2 days in a week	15	9.0	45.6 (22.1)	
Not done	7	4.2	46.3 (11.3)	
Frequency of sharing your fondness/love through hugging or shaking hands?				
All 7 days in a week	18	10.8	65.6 (12.9)	7.713 (0.00004)
5-6 days in a week	29	17.5	45.9 (25.8)	
3-4 days in a week	58	34.9	54.5 (14.4)	
1-2 days in a week	33	19.9	44.6 (14.1)	
Not done	28	16.9	50.7 (27.5)	

Discussion

This cross-sectional study revealed that almost four out of ten respondents had a standardized well-being score ≤ 50 i.e. 40% of students had poor subjective well-being. This finding is supporting other national as well as International studies [23-27]. In a study among medical students in Vietnam, overall poor well-being was reported to be 44.5% [27]; similar finding was reported among the minority medical students in USA [24]. In a study done in IPGMER, Kolkata, 52.56% students were found to be under stress [23]. These supportive findings from different local and global studies, although followed different methods, extends credence to our finding.

This study reported that mean well-being score increased with increasing perceived socioeconomic status and the difference was statistically significant. Due to the poor financial condition, respondents had to go through material hardship, family stress and varied parental input. Due to this suffering, they had poor well-being score [28-30].

The study revealed that participants with perceived family support were more likely to have higher standardized well-being score. The well-being score of the respondents with perceived family support was almost 10 units higher than their counterparts without perceived family support. This is in corroboration with global studies which argued that social support, particularly family support, played a vital role in improving the perceived well-being of an individual; particularly the affective components. It was observed that family connections can provide greater sense of meaning and purpose to life as well as social and tangible resources that benefits well-being [31].

Support from family members may instill greater sense of self-worth, encourages optimism and enhances self-esteem [32]. Family support can influence well-being through psychological, behavioral and physiologic pathways. However, effect of different component of social support on the

well-being score is beyond the scope of this study and evolution of perception related to social support among the medical students might be a topic for a separate longitudinal study.

Higher frequency of self-reported physical activity was found to be associated with higher standardized score of well-being. In last few decades, the attention is slowly increasing on the protective role of physical activity over subjective well-being. Biddle and Mutrie, in 2007 suggested that this effect of physical activity and well-being is probably due to a combination of physiological, biochemical and psycho-social aspects. Role of endocannabinoids, endorphins, serotonin, muscle relaxation, increasing body temperature, providing a medium for taking control health behavior and body appearance were proposed as mechanism for improvement in well-being score [16]. Some argued that social interaction and bonding through regular participation in exercise is more crucial in subjective well-being [15].

In the present study it was noted that frequency of being appreciated for accomplishments had a dose-response relationship with subjective well-being. Accomplishment and appreciation were associated with increased level of dopamine in brain. Del Carnegie once commented that “the deepest principle of human nature is the craving to be appreciated” [33]. Genuine appreciation lifts people up, makes them feel safe and secured, energizes them and raises performance [17]. Recent research also argued that comprehending self-worth and recognition and appreciation by others greatly influence subjective well-being [18].

It was also noted that standardized well-being score was significantly different among the groups of participants having different frequency of exposure humor or laugh corroborating earlier research [34]. It was reported that humor reduces stress hormone like cortisol. It also increases the release of endorphins and dopamine which provide a sense of pleasure and reward [35]. Humor was also assumed to build/ strengthen social bonds which in turn enhance social support and psychological well-being [36]. Participants showing pro-social behavior like sharing resources had higher well-being score, although

the difference was not significant. Feeling love, emotion and belongingness was significantly associated with subjective well-being in the present study as noted by Oravec et al [37].

Sense of belonging was reported to be positively correlated with meaningfulness of life which in turn bolsters sense of well-being [38]. Sharing love and fondness by hugging or shaking hands was also positively associated with subjective well-being in this study. Hugging is not just two people embracing each other but it stimulate secretion of hormones that initiate change in mood. One major hormone is oxytocin, that acting on the limbic system, promotes contentment and reduces anxiety and stress [39].

Limitation: One of the limitations of the study is that it's cross-sectional in nature and thus temporality amongst subjective well-being, perceived family support and physical activity could not be commented upon using this study. Additionally, it was done among medical students and thus should not be generalised to the general population. Being self-reported, quality check during filling up of the form could not be done. Effect of social desirability bias during filling up of the form should also be kept in mind while interpreting the result, although anonymity might prevent this bias to a certain extent.

Conclusion

In spite of all these limitations, this study is one of a few empirical research to assess subjective well-being of medical students in this part of India. Additionally, it emphasized on the fact that even in a medical college, subjective well-being of a medical student depends on perceived socio-economic status and family support as well as frequency of physical exercise, exposure to humor and laugh, appreciation from others, feeling or expressing love or belongingness. Further studies, particularly in the community, might help in generating more evidences in this regard. A longitudinal study might also be planned to note the level of well-being of medical students with progression of academic career.

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