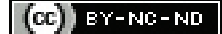


Assessing Resilience among Medical Teachers: A Necessary Step in Building More Equipped Medical Teaching: A Cross-sectional Study

BANKIM CHANDRA KARMAKAR¹, DEBDEEP DASGUPTA², SUNANDA SINHABABU³, SURANJANA SUR MUKHERJEE⁴



ABSTRACT

Introduction: Resilience among medical teachers is not only a subject of academic inquiry but also a growing body of literature. It encompasses perceiving the way of adaption of strategies in times of adversity or change as well as enable people carry on their jobs and lives.

Aim: To assess overall scores and scores of seven domains of resilience-assessment like vision, determination, interaction, relationships, problem solving, organisation and self-confidence.

Materials and Methods: This observational cross-sectional institution-based study was carried out in the Department of Physiology BSMCH, Bankura on 60 medical educators for the period starting in April, 2021 and ending in February, 2022. The Resilience Assessment Questionnaire (RAQ) in Google form was sent to the subjects through email for participating in the study. The responses of RAQ were recorded and analysed by Microsoft excel- 2019. Results were represented in the form of descriptive statistics.

Results: The data was obtained from 60 medical educators of the institute having mean age 49.63 years and comprising of both sexes with atleast 10 years of experience of teaching. With respect to overall scores, 83.3% of the subjects (n=50)

had scores between 35-140 (low score) while only 16.7% (n=10) were found to be pretty resilient. Regarding determination scores 51.7% (n=31) subjects had scores between 5-15 (low level of determination and 33.3% (n=20) had considerable determination (score 16-20) while only 15% (n=9) were determined persons (score 21-25). A total of 50% (n=30) subjects were not very good in problems solving score, 28.4% (n=17) liked and succeeded in solving problems. About 30% (n=18) scored 16-25 and had considerable self-confidence whereas 5% (n=3) scored poorly. In less than 15% of the subjects, the Score of Vision (n=10), Interaction (n=6), Relationship (n=14) and Organisational (n=5) skill were found to be in the higher range (score 21-25) whereas 85% (n=50, 54, 46 and 55, respectively) subjects scored poorly (score 5-20) in these categories.

Conclusion: In the present study, resilience of $\geq 50\%$ participants were found to be at a lower level. It draws attention of medical educators to reconsider the multidimensional factors that influenced their resilience. It may be proposed that brave decisions and actions aiming to improve resilience must be made by medical educators to help making medical students responsible doctors of tomorrow.

Keywords: Medical educators, Resilience assessment questionnaire, Scores, Vulnerability

INTRODUCTION

No single definition can be validated for 'Resilience'. It may be defined as ability to bounce back or recover from stress [1]. It is often called as coping mechanism adopted against adversity. It is also referred to as strategies taken to develop hardiness [2] or mental toughness [3] against an adverse environment by an individual to carry on his/her job or life. Rapidly changing teaching workplace in medical institutions together with personal demands such as caring for children, coping with illness, moving to a new part of the country- everything requires medical trainers to develop resilience. The demands of practicing medicine are significant and high levels of stress and related burnout are widespread among medical students, residents and physicians [4]. Resiliency has been proposed as a mediator to the stressors of medicine and may have positive long-term and far-reaching effects [5]. In the United States, there is recognition of the increased likelihood of burnout in physicians who lack resilience and among those with multiple roles such as clinical academics [6]. All doctors will, at some stage, face demands of studying for exams alongside working and the problem of coping with shift work [7].

Good organisational practice can protect by encouraging safe practice, cultures and mutual supervision and support but medical professionals are always at risk of periods in which workload, adverse

events, emotional demands and the lack of supportive relationships may act as stressors that can undermine professional practice [8]. Stamina, good health, appropriate knowledge and skills, and the ability to respond positively to challenging experiences are needed. In addition, doctors represent huge investment in terms of time and resources, both on their own part and on the part of the economy that supports them.

The present authors noted that the concept of resilience, which appears to relate to the long-term ability of individuals to survive and thrive during adversity, has relatively little representation in the medical education literature especially in India and agreed to undertake this study among the medical teachers of this institution located in a non metro city albeit keeping in mind that resilience is not an end in itself; developing other aspects of effective professionals also requires attention [9,10]. The present study assesses overall scores and scores of seven domains like vision, determination, interaction, relationships, problem solving, organisation and self-confidence for resilience-assessment.

MATERIALS AND METHODS

It was a observational cross-sectional institution-based study conducted from April 2021 to February 2022, among the medical teaching professionals of Bankura Sammilani Medical College

and Hospital (BSMCH), located in a semi-urban district of West Bengal in India, duly permitted by the Institutional Ethics Committee (Certificate No. BSMC/Aca: 2157). After taking proper consent from the participating teachers.

Inclusion criteria: The Medical teaching professionals of BSMCH, Bankura of both sexes who atleast had 10 years of experience of teaching, were interested in participating and filled the complete questionnaire were included in the study.

Exclusion criteria: Those medical teaching professionals of BSMCH who did not have atleast 10 years of teaching experience and those who were unwilling to participate or returned incomplete questionnaire were excluded.

Sample size calculation: It was calculated by the following formula [11]:

$$N = Z\alpha^2 \times p \times q / e^2$$

here, $Z\alpha$ = standard normal deviate (For 90% confidence interval, it is taken as 1.645), p is the proportion in population possessing the characteristic of interest and $q = 1 - p$. This expected proportion in population is estimated from literature or pilot study

e = Absolute error

After putting $Z\alpha = 1.645$, $p = 0.3$, $q = 0.7$, the sample calculated came to be $N = 57$.

Study Procedure

Questionnaire: The included participants were invited with a pretested, semi-structured questionnaire (RAQ) in Google form structured by Management Advisory Service (United Kingdom) in English language sent to their email IDs [Annexure-1]. Participants and investigator both were blinded regarding sending and receiving questionnaire or response. Confidentiality and anonymity were maintained. The RAQ used for this survey was free to use and was a component of the Management Advisory Service (United Kingdom), a member of the Well-being and Performance Group, towards "Building the capacity for resilience in individuals" and individual coaching (www.mas.org.uk) [12]. The domains used in this questionnaire are based on various scales like Resilience Scale for Adult (RSA) having Cronbach's alpha value 0.67-0.9, Brief Resilience Scale (BRS) having Cronbach's alpha value 0.8 and above, Trauma Resilience Scale (TRS), Multidimensional Measure of Personal Resilience (MMPR) etc., [13].

RAQ had 35 questions. Each question is to be answered by selecting the number most closely reflecting your feelings today viz., 1=No never and 5=Yes always. 2, 3 and 4 are shades in between. Response of RAQ from 60 subjects (40-60 years) were gathered and recorded by consecutive sampling in Microsoft excel- 2019 for data analysis.

The data was obtained from medical teachers of the institute comprising of both sexes who atleast had 10 years of experience of teaching the undergraduate medical students. Interpretation of scores is as below.

A. Overall scores

35-105: Your total score indicates there is plenty of opportunity for you to develop and sustain all your elements of resilience.

106-140: You have built a substantial amount of resilience in your life so far to cope with most events that happened to you but you remain unsure about some aspects of your life.

141-175: You are pretty resilient.

B. Specific scores with regard to the qualities of human mind:

Seven domains of assessment like vision, determination, interaction, relationships, problem solving, organisation and self-confidence were considered for assessment of resilience among medical teaching professionals. Scoring system of those scales are described below.

i) Vision: Normal resilient people usually have a clear idea of their ambition in lives. Total score of question nos. 1, 8, 15, 22 and 29 were considered to describe vision.

Interpretation of score

5-10: You are not very strong in working out what you want from life and may find that the idea of having a goal is something to be avoided.

11-15: You have some vague idea of what you want to do or you may have had an idea in the past that you have achieved or abandoned.

16-20: You have got a pretty clear understanding of your vision but may have doubts.

21-25: You are resilient on this element of resilience.

ii) Determination: High levels of determination make resilient people able to achieve things what they want to achieve. Total score of question nos. 2,9,16,23 and 30 were considered to describe determination.

Interpretation of scores

5-10: You have low score in determination.

11-15: You have determination that sometimes falters.

16-20: You do have considerable determination, but one or two actions along the way haven't worked.

21-25: You are a determined person.

iii) Interaction: It is about how we behave with other people. Total score of question nos. 3, 10, 17, 24 and 31 were considered to describe interaction.

Interpretation of scores:

5-10: You are not very effective in your interaction with others and this may have an impact on your self-confidence and personal esteem.

11-15: You find that some interaction doesn't go the way you wish and that this leaves you with some degree of insecurity about handling certain situations.

16-20: You can handle most interactions, but there may be one or two that you struggle with.

21-25: You are confident in your interactions with others.

iv) Relationships: In order for us to survive and prosper we need to forge relationships. Total score of question nos. 4, 11, 18, 25 and 32 were considered to describe relationship.

Interpretation of scores

5-10: Your relationship history is not good.

11-15: Your relationships could do with a spring clean.

16-20: You have some good relationships but you need to polish some of these to make them even better.

21-25: Your relationships are good.

v) Problem solving: Resilient people like to solve problems and rise to challenges, so long as they can resolve the problems and meet the challenges successfully. Total score of question nos. 5, 12, 19, 26 and 33 were considered to describe problem solving.

Interpretation of scores

5-10: You are not very good at solving problems.

11-15: You have some success in solving problems but you are not very comfortable with problems and challenges.

16-20: You are quite good at problem solving but some you win and some you lose.

21-25: You like solving problems and probably complete the weekly challenges that appear in Sunday newspapers.

vi) Organisation: People who are well organised are able to cope with the chaos of daily life better than those who do not pay attention to organise themselves, prevailing to rely on memory and luck. Total

score of question nos. 6, 13, 20, 27 and 34 were considered to describe organisation.

Interpretation of scores

5-10: You may enjoy chaos and the ability to wing your way through your working day.

11-15: You have some ideas about organising your life but not enough to make this a strong point in your portfolio.

16-20: You have some organisation habits already and these seem to work for you, aiding your general level of resilience.

21-25: You are clearly in control of your day, week, month and possibly year.

vii) Self-confidence: Self-confidence is clearly apparent in resilient people. Total score of question nos. 7, 14, 21, 28 and 35 were considered to describe self-confidence.

Interpretation of scores

5-10: You appear not to have much self-confidence.

11-15: You are wavering about your level of self-confidence; not quite sure how confident you are.

16-20: You have considerable self-confidence but some situations make you feel apprehensive and uncertain.

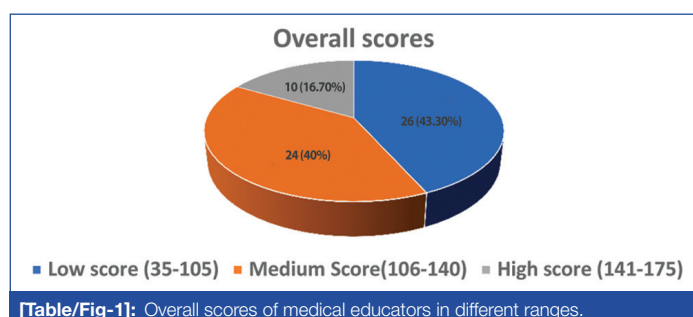
21-25: You are self-confident.

STATISTICAL ANALYSIS

Data obtained from Google form were compiled and analysed in Microsoft excel spreadsheet-2019 by the scoring system as proposed in 'RAQ' form created by the Management Advisory Service (United Kingdom) [11] for interpretation of different scales as well as overall scores. Results were represented in the form of descriptive statistics.

RESULTS

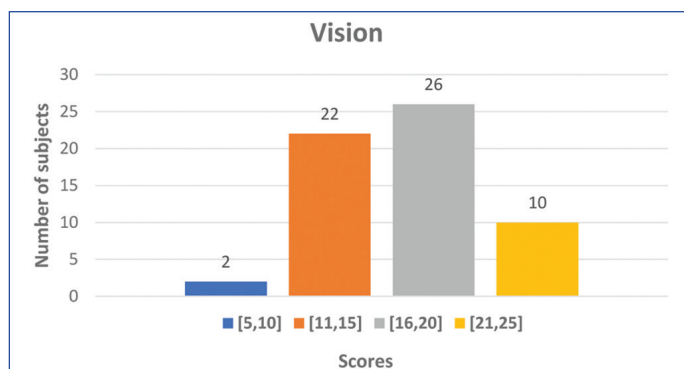
The data was obtained from 60 medical educators of the institute having mean age 49.63 years and comprising of both sexes with at least 10 years of experience of teaching. While considering overall scores, 43.30 % of the subjects (n=26) had scores between 35-105 (low score) who required to develop and sustain all elements of resilience, 40% (n=24) had scores between 106-140 (medium score) while only 16.70% (n=10) were found to be pretty resilient [Table/Fig-1].



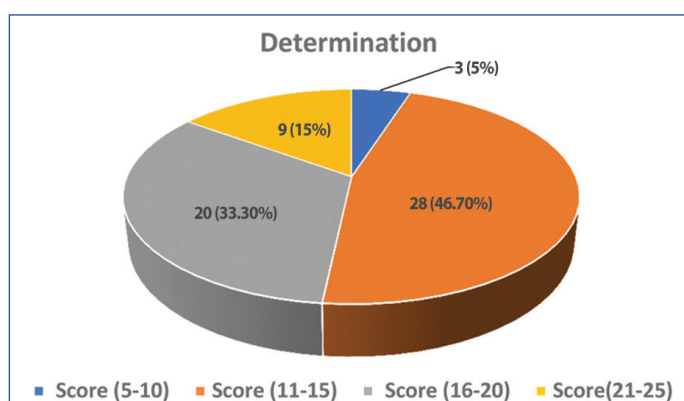
Regarding the vision score, 40% (n=24) had poor or vague vision about their life whereas, 60% (n=36) had pretty clear vision and were resilient too [Table/Fig-2].

When considering determination scores, 5% (n=3) subjects had scores between 5-10 (poor level of determination), 46.7% (n=28) subjects had scores between 11-15 (low level of determination) and 33.3% (n=20) had considerable determination (score 16-20). Only 15% (n=9) were determined persons (score 21-25) [Table/Fig-3]. A 45% (n=27) subjects had poor ability to interact [Table/Fig-4] while 55% (n=33) were pretty good at interaction [Table/Fig-5].

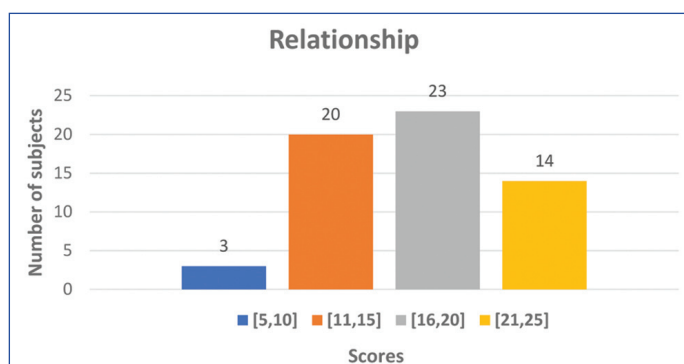
A 38.8% (n=23) subjects were not very good in their relationship skill while 61.2% (n=37) were able to build or improve relationship with everyone they met [Table/Fig-4]. When problem solving scores



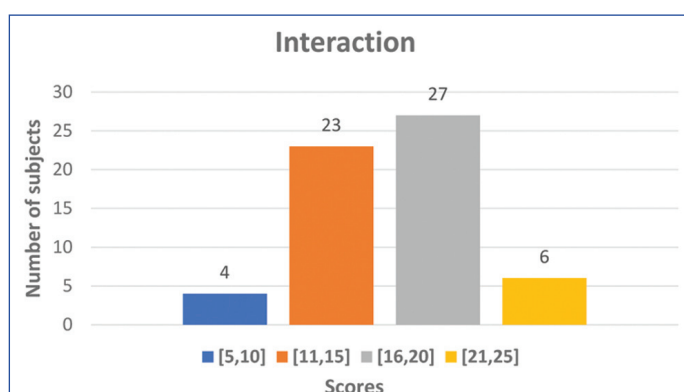
[Table/Fig-2]: Vision scores of medical educators in different ranges. Orange and blue bar: poor/vague vision (n=24); Grey and yellow bar (n=36)



[Table/Fig-3]: Determination scores of medical educators in different ranges.



[Table/Fig-4]: Relationship scores of medical educators in different ranges.

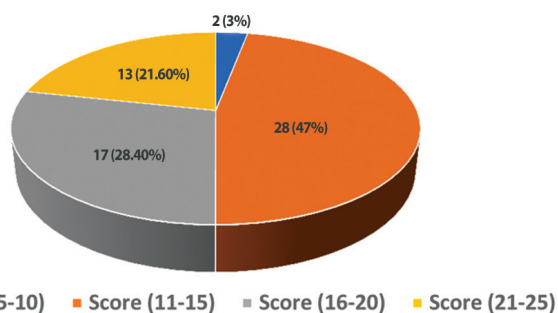


[Table/Fig-5]: Interaction scores of medical educators in different ranges.

were considered, 3% (n=2) of the subjects was not very good at solving problems. A 28.40% (n=17) of the subjects had some success in solving problems. 21.6% (n=13) liked and succeeded in solving problems. 47% (n=28) of the subjects were in between [Table/Fig-6].

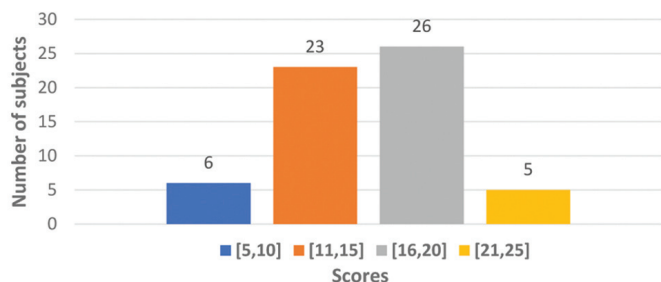
A 48.3% (n=29) subjects did not have enough idea about organising their life while 51.6% had sufficient organising habits to aid their level of resilience [Table/Fig-7].

Problem solving



[Table/Fig-6]: Problem solving scores of medical educators in different ranges.

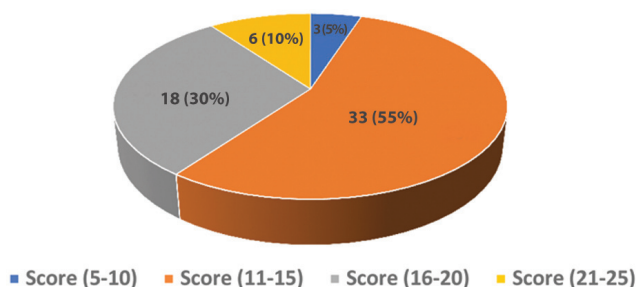
Organization



[Table/Fig-7]: Organisation scores of medical educators in different ranges.

While assessing self-confidence scores 5% (n=3) subjects appeared not to have much self-confidence. 55% (n=33) subjects were not quite sure how much self-confidence they had. 30% (n=18) had considerable self-confidence (score 16-20) and 10% (n=6) were pretty self-confident (score 21-25) [Table/Fig-8].

Self-confidence



[Table/Fig-8]: Self-confidence scores of medical educators in different ranges.

DISCUSSION

Over the past decade, research has constantly showed that teaching is an emotionally, physically, and intellectually challenging job [14-17].

In 2019, Chan L and Dennis A conducted a study on 244 medical educators of United Kingdom. Resilience levels were found to be comparable to other population samples and only depressive symptoms were found to be negatively associated with resilience levels. Resilience promoting factors were predominantly found to be internal factors (e.g., emotional regulation). Educators perceived multidimensional influences on their own resilience but predominately viewed internal factors as being supportive and external factors as undermining [18]. In the present study, internal factors (determination, problem solving and self-confidence) are found to influence resilience of medical educators positively.

In 2014, Tregoning C et al., in their article titled "Facing change: Developing resilience for staff, associate specialist, and specialty doctors" observed that, respondents had benefitted from spending more time doing in-depth activities in workshop attributed to building

resilience [19]. The study was conducted in United Kingdom and encompassed personal aspects including gaining increased self-awareness, insight, clarity and reflecting on resilience characteristics of others.

In 2012, Howe A et al., studied resilience and its relevance to medical training and concluded that resilience is a useful and interesting construct which should be further explored in medical education practice and research. They found that self-efficacy, self-control, ability to engage support and help, learning from difficulties and persistence despite blocks to progress are not only dimensions of resilience but also qualities of a clinical leader [8]. Similarly in the present study, the authors also found that determination, problem solving and self-confidence not only improved the qualities of medical teachers but also added dimensions to their resilience. Some studies were done investigating resilience and factors related to distress relating to it. Many researchers identified negative associations between resilience and depression and general mental health problems [20,21]. For medical educators, Porter M et al., found no associations between the resilience level of 'US family medicine program directors' and their demographic background, including gender [22].

Cooke GP et al., observed that burnout has significant consequences on a doctor's own health and that of their patients giving negative correlation with resilience [23]. For example, internal medicine trainees who are extremely over-worked are more likely to self-report sub-optimal patient care [24] and medical errors [25]. Burnout is also linked with the intention to leave clinical medicine [26]. Montgomery A et al., have correctly stated that burnout is the missing link in quality care [27]. Indeed, burnout and physician wellness have been described as neglected quality indicators in medicine [28].

In 2013, Antoniou AS et al., in their study reported lower levels of teacher burnout among teachers who stated that they approached problems in a positive way and adopted problem solving strategies. They conducted their study in Attica, Greece on teachers having teaching experience of average 16.2 years. They found that positive approach of problem solving predicts high level of personal achievement [29]. In the present study, the authors found that problem solving ability was a strong predictor of high level of resilience.

Beltman S et al., found negative feelings and low self-confidence were risk factor for teachers' resilience while Théorêt M et al., emphasised difficulty to balance professional and personal life and low professional competences and abilities were the most frequent personal risk factors in the teachers' discourse [30,31].

The present study observations though qualitative in nature, gave rich insight about the mental ability of the teaching physicians. In $\geq 50\%$ subjects of the present study, score of determination, problem solving, self-confidence as well as overall scores were found to be at a level that draws attention of medical educators to reconsider the multidimensional factors that influenced their resilience.

In less than, 15% of the subjects, the score of vision, interaction, relationship and organisational skill were found to be in the higher range whereas 85% subjects scored poorly in these categories. Wang Y has rightly said that teaching is one of the most challenging and complicated professions in the world owing to its intellectual, emotional, and service-providing nature as was also supported by studies of Sikma L; and Mercer S; [32-34]. The teachers carry their own feelings, emotions, and values to the class; hence caring for their mental well-being and inner states is of utmost significance in all educational contexts. Mansfield CF et al., have observed that personal and contextual resources along with use of particular strategies contribute to resilience outcomes and that many of these can be developed in teacher education. Using these findings, he has proposed a comprehensive resilience framework with five overarching themes- understanding resilience, relationships, well-being, motivation and emotions by Mansfield CF et al., [35].

Brown MEL et al., has observed crises in medicine due to erosion of empathy and burnout and has suggested 'stoic training' which increases emotional well-being, resilience and empathy. Along with conventional teaching methodology, exploring this type of training coupled with psychotherapy within medical students is gaining importance in the modern medicine to cope up with increasing stress [36].

Limitation(s)

In this study, the participants were from a single college and hence the data cannot be completely relied upon before giving recommendations for building resilience in medical educators as a whole.

CONCLUSION(S)

In this study, resilience of the medical teachers of the institute was found to be at lower level. Based on the findings of this study interventions addressing determination, problem solving and self-confidence are encouraged to attain higher level of resilience among medical educators. Resilience of medical teachers directly influences the resilience of medical students who will be the flag bearers of this noble profession in future. The findings of the present study prompt assessment of resilience among the Indian teaching doctors in a larger scale along with finding out the reasons and remedies of low scores, if any.

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AUPTA DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

PLAGIARISM CHECKING METHODS: [Jan H et al.]

- Plagiarism X-checker: Jul 26, 2022
- Manual Googling: Dec 14, 2022
- iThenticate Software: Jan 09, 2023 (19%)

ETYMOLOGY: Author Origin

Date of Submission: Jul 22, 2022
Date of Peer Review: Sep 22, 2022
Date of Acceptance: Jan 14, 2023
Date of Publishing: Apr 01, 2023

[ANNEXURE-1]**Resilience Assessment Questionnaire (RAQ)**

Please complete the following 35 questions about yourself. When completing the questionnaire, please think about your domestic and work experiences as they are today, and do not dwell too long on each question.

Select the number most closely reflecting your feelings today. 1=No never and 5=Yes always. 2 3 and 4 are shades in between.

1. I know what I want to achieve during my lifetime 1 2 3 4 5
2. I have ambitions to achieve certain things during my lifetime 1 2 3 4 5
3. I normally enjoy the company of other people 1 2 3 4 5
4. I sometimes share my innermost secrets with a select number of friends 1 2 3 4 5
5. I normally enjoy solving problems 1 2 3 4 5
6. I like to write down my list of things to do each day 1 2 3 4 5
7. I know what I want to get from each day 1 2 3 4 5
8. I am determined to achieve certain things in my lifetime 1 2 3 4 5
9. I often rely on others to help me achieve what I want 1 2 3 4 5
10. I have a personal brand that I think I regularly demonstrate to others 1 2 3 4 5
11. I have strong relationships with those who help me achieve what I want 1 2 3 4 5
12. I love challenge 1 2 3 4 5
13. I plan my holidays at the last minute 1 2 3 4 5
14. I tackle most challenges I face 1 2 3 4 5
15. I can tell when I'm feeling good about the way my life is going 1 2 3 4 5
16. I have a get up and go approach to life 1 2 3 4 5
17. I know myself very well 1 2 3 4 5
18. I have good friends who provide me with the emotional support I need 1 2 3 4 5

19. I really enjoy unravelling causes of problems 1 2 3 4 5
20. I normally tackle big tasks in bite sizes 1 2 3 4 5
21. I like taking the lead 1 2 3 4 5
22. My current work is a step towards achieving things I want in my lifetime 1 2 3 4 5
23. I know what to do in most situations I face 1 2 3 4 5
24. I always listen and understand what others are talking to me about 1 2 3 4 5
25. I normally see myself as self sufficient 1 2 3 4 5
26. I can solve most of my problems 1 2 3 4 5
27. I like making lists 1 2 3 4 5
28. I normally feel comfortable in new situations 1 2 3 4 5
29. I know what I have to do to achieve what I want in life 1 2 3 4 5
30. I have a strong motivation in achieving what I want 1 2 3 4 5
31. I am normally curious about people 1 2 3 4 5
32. I prefer travelling on my own 1 2 3 4 5
33. I help others solve their problems and challenges 1 2 3 4 5
34. I review my achievements regularly 1 2 3 4 5
35. I know I'm a great person 1 2 3 4 5

Scoring					
Vision	Q1	Q8	Q15	Q22	Q29
Determination	Q2	Q9	Q16	Q23	Q30
Interaction	Q3	Q10	Q17	Q24	Q31
Relationships	Q4	Q11	Q18	Q25	Q32
Problem solving	Q5	Q12	Q19	Q26	Q33
Organisation	Q6	Q13	Q20	Q27	Q34
Self-confidence	Q7	Q14	Q21	Q28	Q35
Overall score					