Diabetes Therapy Podcast: Mind–Body Medicine in Diabetes Management

Sanjay Kalra · Vaishali Deshmukh

Received: July 21, 2022 / Accepted: July 21, 2022 / Published online: August 26, 2022
© The Author(s) 2022

Keywords: Diabetes; Mind body medicine; Self care practice; PNIE; Neuroplasticity; Translational gap; Outcomes; Quality of care; Adherence; Compliance

DIGITAL FEATURES

This article is published with digital features, including a podcast audio file, to facilitate understanding of the article. To view digital features for this article, go to https://doi.org/10.6084/m9.figshare.20349156.

PODCAST TRANSCRIPT

Sanjay Kalra (SK): Department of Endocrinology, Bharti Hospital, Karnal, Haryana, India.

Vaishali Deshmukh (VD): Deenanath Mangeshkar Hospital and Deshmukh Clinic and Research Centre, Pune, India.

SK: Good day. I am Dr. Sanjay Kalra, I am an endocrinologist working at Karnal in India. I also serve on the editorial board of Diabetes Therapy. It’s a matter of pride and pleasure for me to introduce our guest today, Dr. Vaishali Deshmukh. Dr. Vaishali warm welcome to this podcast at Diabetes Therapy. Would you like to tell the audience a bit about yourself?

VD: I’m Dr. Vaishali Deshmukh from Pune, India. I’m an endocrinologist, researcher and academician who works at Deenanath Mangeshkar Hospital and Deshmukh Clinic and Research Centre. We see around 700-800 endocrine patients in a month and I’m also involved in academic programmes and teaching at the B J Medical College Pune. I also happen to be a secretary for non-profit public charitable institution called Sphere which primarily works in mind health in endocrinology, non-communicable diseases, women’s health and cancer. This is how I landed up addressing the brain as an endocrine organ and it also explains my love for neurobehavioral endocrinology, mind health in endocrine disease, and hormonal dysfunction in mind disorders. In addition, we have been working with the Centre for...
Behavioural Medicine which also works for improving mind health of patients so that’s how I am here today.

SK: Thanks Dr. Vaishali. You are so busy in endocrinology. Endocrinology is the study of hormones. What made you venture into mind–body medicine? You are considered a pioneer in this field, and rightfully so, but what is it that nudged you to enter mind–body medicine?

VD: That’s right, I personally believe that all of us do agree that there is an unmet need in treating type 2 diabetes (T2DM). This unmet need is mainly in the form of a translational gap—a translational gap for converting guidelines into practice, especially when we have guidelines for prevention and treatment. It is not possible to convert this into practice 100% and this translational gap has a lot of reasons which are related to mind health and that is why we are not reaching the ideal expectation also. We have seen that people are aware of guidelines but they are failing to translate these guidelines into practice and the reason being is that, mind health not being addressed appropriately.

SK: That makes sense, but can we take one step back and can we understand the relationship between mind and body. Is it a one-sided relationship or is it bidirectional?

VD: I would have to say it’s a bidirectional behaviour [1] that we see in respect of mind health. The mind not only affects behaviour, it also modifies hormones. Hormones are in turn known to affect immunity, so all these are interlinked. All these affect brain function, cardiovascular function, physiological homeostasis and well-being which eventually causes disease. The cause of disease may be at the root, related to the mind health of the subject. In addition, with any stressors, which may be metabolic stressors, psychologic stressors, physical stressors or environmental stressors, there is an activation of the psycho-neuro-immune-endocrine (PNIE) axis, known as the PNIE axis. Our hormonal and autonomic axes are involved in any of these stressors and here you find that there is a common link which affects stress and mind health and that is a hypothalamic dysfunction. The hypothalamus is a common seat which gets affected when these stressors come into the picture. PNIE also forms the basic constituent of all the neuroendocrine system. I am sure you will agree with me that most of the neuroendocrine functions like glucose metabolism, lipid metabolism, blood pressure (BP) regulation, homeostasis regulation, thermogenesis and hypoxia detection are all controlled by the neuroendocrine system and this is turn affects the PNIE axis.

In short, we are trying to say that PNIE is involved with all the physiologic regulations and well as it is involved with all the stress management activities in the body as well as various behaviours. Whether it is a stress behaviour, aggression behaviour, gender behaviour or a maternal behaviour—any type of behaviour has integration of all this axes together. Whenever there is a maladaptive response to the stressors, that is where the vulnerability to disease comes into picture. This causes an activation of the hypothalamic pituitary adrenal (HPA) axis and this we know is a common seat for occurrence of chronic diseases. We are seeing that NCDs (non-communicable diseases) are on the rise; this rise is also because there is a chronic activation of the HPA axis which we are not able to suppress at that level, and probably one of the causes is that the mind health is not regulated for these subjects.

SK: You’ve mentioned such a vast spectrum of the impact of PNIE. But let’s focus on diabetes. Is mind health actually affected in diabetes mellitus?

VD: Proof of dysfunction of PNIE has been seen in studies which suggest that one in five adults with type 2 diabetes have depression and one in three also experience diabetes distress, which is a very commonly known entity. Most of the time, PNIE dysfunction comes like [a] psychosomatic manifestation—palpitations, breathlessness or fatigue, which cannot be explained by your glycaemic status or metabolic status. These are actually the effects of the
psychosomatic axis because of this chronic stress activation. Neurological and immunological dysfunction is also soon to occur with diabetes and this is a well-known fact that immunity is suppressed, we have seen this in Covid also. The disturbed PNIE axis forms an important basis for all the hormonal and autonomic imbalances which is seen not only in diabetes but with all the chronic entities, including chronic stress. It forms a unifying concept when we are talking about PNIE dysfunction and diabetes very much has a lot of disturbance in this whole axis.

SK: That is quite clear that mind health is affected in diabetes mellitus, but why does this happen? What is the basic pathophysiology behind all this?

VD: One needs to see all these entities in light of dysfunction of the PNIE axis. When the psychology is impaired the neurology and the immunology and the hormonal axis, every change is going to be manifested. We know that when a person is stressed their sugars will rise and that will cause diabetic-like manifestation. Similarly, this disease not only changes the lifestyle but it also changes the mindstyle of the patient. We see that the mindstyle of the patient is also changed and the soundness of the mind is also not maintained in the normalcy. We all know that behaviours are mind driven and that’s why there’s the saying ‘sound mind sound body’. You need to have a sound body and a sound mind. The sound mind is what is going to give rise to a sound body. Addressing mind health in diabetes could eventually translate into healthy eating behaviours, healthy exercising behaviours, thinking rationally, being compliant and adherent with therapy and lead to fulfilling this unmet need that has been seen in diabetes management. We are not able to change behaviours in our diabetic patients and this is a struggle we have faced throughout.

SK: I fully agree with you there. In spite of doing our best we are not able to change lifestyle in the vast majority of the public. A question for you Dr. Vaishali, behavioural dysfunction in diabetes—is it a cause or is it just an effect?

VD: I think it is both. We have seen that stress, depression, eating disorders, dietary disorders—all are known to manifest with hypoglycaemia and can contribute to worsening of diabetes. There is also a persistence in sympathetic and hypothalamic adrenal activation and along with this we commonly see comfort eating. We see comfort eating in patients with diabetes and overeating. Which also soothes the psychologic pain of these patients. So it is a bidirectional relationship so it can be a cause as well as an effect of diabetes.

SK: You’ve raised so many relevant points. But can you help us to understand what exactly is mind–body medicine in a few words? This concept of mind–body medicine—is it different from other practices like yoga?

VD: The NIH says that mind–body medicine encompasses a wide range of practices and therapies designed to facilitate the mind’s capacity to affect health. How you change your mind to improve your health is what mind–body medicine tells us. It is evidence based, and participation is involved. It is a self-care approach that does not depend on anybody. It is affordable, it is easy to do at home, and its less time consuming and it can be measured. So these are the advantages. It is combining the effect of traditional knowledge of yoga, meditation and spirituality with the modern psychology and medicine and has applicability across the health cycle from prevention to rehabilitation to improving health outcomes in various diseases and is true even for diabetes. Traditional practice of yoga, or for that matter any mind–body practice, follows a set of rules, regulations and protocols. That makes it very inflexible, so mind–body medicine has an advantage that it is very flexible, very versatile and it can be tailor-made to the needs of the particular subject. So a person who likes doing meditation or maybe another who likes doing yoga or maybe another person who likes doing deep breathing exercises, so the choice remains...
with the patient. What is important is the regularity and persistence. Regularity of doing it, persistence of doing it for years together. Finally, what happens with these practices is that neuroplasticity changes. There is a change in the brain structure which is what we call neuroplasticity which is what brings about the behaviour change. Behaviour change is the root of changing all the diseases which are non-communicable and this can be easily brought about with long practice of mind–body medicine.

SK: Really important information. Please allow me to paraphrase what you have just said. Mind–body medicine is a form of medicine. It is really person centric because it is flexible. The person living with disease is able to choose what he or she wants and will benefit from. Mind–body medicine also follows the concept of the biopsychosocial concept of health. It focuses on biomedical health but also on psychosocial health. Another is that it is dynamic. It can change from person to person and it can also change within the same person from one phase of life to another. It empowers the patient, because the patient is able to take care of his or her own health. You are able to encourage an internal locus of control instead of the patient feeling that he or she is depending upon a doctor or nurse, the patient can take charge of his or her health.

SK: You also mentioned the mechanism of action of mind and body medicine, you spoke of a neuroplasticity. But if you could just explain this mechanism of action in a single sentence what would it be?

VD: What mind–body practices do is they incite a state of positivity in the mind of the patient which helps behavioural change. The physical benefits are known to us but the psychological benefits go beyond and this neuroplasticity causes certain changes and if you were to put it in a single line—it is enhancing cortical control of autonomic behaviour through all these practices. We are controlling the unregulated mind whilst purposefully doing a cortically controlled activity and helping the neuroplasticity.

SK: So we regulate the mind, and through that we regulate the nervous system and also the endocrine system. In the endocrine system we focus on the adrenal glands upon other catecholamines—all of these are counter-regulatory hormones. They all counter the effect of insulin. If you are able to reduce the counter-regulatory hormones, automatically, you will be able to de-stress the islets of Langerhans which are having to work so hard to produce more insulin and you will be able to reduce insulin resistance.

SK: Dr. Vaishali, we have spoken more than once and both of us have eluded to the difficulty to change behaviour and lifestyle. A simple yes or no question: is it actually possible to change behaviour through mind–body medicine?

VD: The answer would be a simple yes. We have seen in sleep behaviour—a classical example is that when people do yoga and meditation the sleep cycle changes and people can sleep better and there is a better autonomic regulation. We have seen that blood pressure control improves with these techniques. So, definitely we can change the behaviour through mind–body medicine practices.

SK: Can you share some other examples? How can we use the principles of mind–body medicine to prevent diabetes or to manage its complications?

VD: As far as endocrinology is concerned, obesity control we know needs a lot of healthy eating techniques and behaviours and there is an important role for these mind–body medicine practices. This also works for ‘diabesity’ along with obesity. Secondly, de-addiction. We see a lot of patients with food addiction also and substance abuse. So both ways, de-addiction requires a lot of mind–body medicine practices for years together they have shown to prove benefit. Exercise behaviours and physical fitness is better in diabetic subjects and this has
been proved in various studies, especially if they follow mind–body practices. This has been proven with yoga all over the world and is true with meditation also. Compliance with lifestyle therapies is also better in diabetic patients who have a better mind control. This is also seen in various studies done in the literature. I think there are a lot of examples and we are still working on it. I’m sure we will get more data into this.

SK: Will mind–body medicine help me lose weight, Dr. Vaishali?

VD: Yes, because when you’re controlling the unregulated mind you are also controlling your eating behaviour, your physical activity, you’re also controlling your portion size and helping your compliance to all these things, so definitely it works for improvement of obesity. Obesity is a disease where mind–body medicine works the best. Of course, it needs to be followed as a lifelong regular practice.

SK: This makes sense actually, and I am glad I am on this podcast with you as a physician, endocrinologist and also as a person living with obesity. I think I am on the right track and I am listening to the right podcast!

SK: I realised the value of mind–body medicine recently after Covid-19. In long Covid-19 many of our patients, especially those with pre-existing diabetes or hypertension or heart disease, turned up with tachycardia, a syndrome of inappropriate tachycardia. No medicine would work, no kind of psychology or psychotherapeutic intervention would work... and then we put them onto yoga. When you have cardiac autonomic neuropathy in diabetes, the first damage is done to the parasympathetic system. It’s primarily a parasympathetic dysfunction which means the vagus is not able to work. When the vagus doesn’t work properly the sympathetic system goes into overdrive, there is nothing to check it and then you go into tachycardia which causes a lot of complications. As it is, Covid [led to]... more fearful people, [who] would get more anxiety. When you teach people yoga, and that is part of mind–body medicine, you are actually strengthening the vagal tone and because of that you can bring down the tachycardia and you can improve the symptoms. This is one other situation, in diabetes and outside of diabetes also, where mind–body medicine actually helps.

SK: Dr. Vaishali, let’s go onto practical things now. I am more interested because I think this is the therapy for me. What are the common mind–body medicine practices that have been proven to be beneficial?

VD: I think what you said is perfectly right. The sympathetic nervous system is turned off and the parasympathetic gets turned on. It’s like a ‘mind gym’. What is a sound mind? A sound mind is a mind which has a balance of the sympathetic and parasympathetic nervous system, and this is somewhat what is achieved with mind–body medicine. If you look at different practices including yoga, what they do is work like a mind gym. They try to balance this, things like meditation techniques, deep breathing techniques, yoga techniques, relaxation therapies like yoga nidra, which is practiced in India very commonly, and in modern medicine we have progressive muscular relaxation which is practiced in our patients. Guided imagery is practiced, be it visual or auditory, attention regulation techniques are described in psychology, various massage techniques, tai chi, qigong, acupressure techniques and even the latest mind–body stress relaxation techniques (MBSR) techniques. These work significantly in terms of helping the mind health of the patient. Any of the practices are as good, no one is better than the other. The matter is again regularity; a properly done technique and it being regularly practiced for years together is what will give benefit to the patient. Any of these techniques would suit the purpose.

SK: Dr. Vaishali, you have used such a beautiful phrase, a meaningful phrase and that is the mind gym. Just a question: when I go to the gym to exercise I have to take my antidiabetic therapy along with that, but the gym helps me to reduce the dose
requirement. If I practice mind–body medicine, then do I have to continue going to the physical gym? And do I have to continue taking drug therapy?

VD: I think we all need to understand that mind–body medicine is not a replacement. It is a synergistic addition or an integral part of the medication. It is not a replacement or alternative to medicine. We have to continue taking our medicines but we have to add on these techniques so that the requirement of those medicines can reduce gradually and at least you can help better controlling your own complications as well as the outcomes that you need to achieve in your patients. Quality of life is also going to be better if these practices are done on a regular basis.

SK: Doing it on a regular basis is fine. As a person living with diabetes I don’t mind doing that. But then I will have a question for my doctor and that question is, do we have evidence? Is there published evidence that mind–body medicine is helpful?

VD: Yes. We do have a lot of studies that are now being done very systematically. We have randomised controlled trials on yoga affecting the heart rate variability. We know that heart rate variability is an important marker of allostatic load in the body for disease and we know that techniques like yoga meditation are known to improve the heart rate variability of the subject. There are also studies, in fact Dr. Rishi Shukla [2] from India has published in type 1 diabetes the outcomes and the quality of life of patients has been better when mind–body techniques were used. We ourselves are doing certain studies, you Dr. Sanjay are a part of a study we have designed—a questionnaire which can assess mind health of patients within two minutes’ time. We expect to do many more on assessment of PNIE and I am sure that even the global literature on yoga is vast. Last year more than a thousand studies [were] published on yoga and its benefit on health. I am sure we will have many more studies to come in the future also.

SK: If mind–body medicine is so useful, we have evidence and we have experience supporting it, why then is it not used so frequently in diabetes and endocrinology? What are the barriers to its use?

VD: There are a lot of barriers when it comes to different stakeholders into this and a common barrier is the knowledge barrier. Healthy mindstyle is important for managing every disease. So it’s not whether you’re a diabetic or not a diabetic but a healthy mindstyle is as equally important as a healthy lifestyle. Secondly, there is a lot of ignorance on the subject. There is a lot of doubt on the educational material on this particular subject and the techniques done. That is one thing that we really need to work upon.

Also, misinformation. Most of the time it is mistaken as alternative medicine, especially when it is confused with traditional medicine. It is mistaken that mind–body medicine is an alternative medicine rather than a mainstream medicine. That is one of the misinformation and misconceptions. Often, patients and doctors also feel that it is very complex, not doable, or not their ‘cup of tea’. It is easily doable and anyone can do it anywhere. You can do it in your office also. You don’t have to have a place or situation for it, just an inclination for it.

Then, there is an attitude barrier so most endocrinologists feel that ‘it’s not my job’ as a specialist managing diabetes. ‘It isn’t my job to deal with mind health’. That is one thing that as a person treating diabetes, we know diabetes is a systemic disease, so holistic health should come as a part of diabetes management. It can’t be only restricted to glycaemic control.

Then there is a perception barrier that patients perceive that this is a job of a yoga teacher, it requires a (yoga) mat, I need to go to the gym, so that’s a perception. It is not absolutely true. There are also resource barriers, people feel they need to have the right place, right type of equipment, dressing material and infrastructure. In the real sense that all these techniques do not require any infrastructure except your preparedness and that’s what is important.

Then comes the public health barrier from the political/public health initiative point of view. In India, our prime minister has been very
aggressive about the promotion of yoga and people have taken it up in the right way.

SK: Dr. Vaishali, I want to learn more about mind–body medicine. Such beautiful phrases you have taught me today—mind–body medicine, the mind gym, a healthy mindstyle. So, if I want to learn more, which other platforms can I access to get some authentic knowledge.

VD: Yes, I think you have been very actively involved with our programmes in mind health. The Synapse is a conference which we do annually and it’s on YouTube. We started it in 2020–2021. The endocrine Society of India has been very actively participating and collaborating in this activity. Many organizations are part of this activity including the Indian Psychiatric Society. I think such kind[s] of activities can be taken on a larger scale eventually. Our recent study on assessment of mind health of endocrine patients with a 2-min mind health questionnaire has been presented at the AACE 2022 meeting and has been published [3]. On new beginnings, we have started, in collaboration with the CBM Trust, a fellowship programme in mind–body health for doctors. These kind[s] of programmes... are going to discuss the basics of the mind health of the patient. For psychiatrists, it is always the ‘abnormal mind’ which is spoken of. Here we are going to talk about the normal mind... how do you preserve the mind health of a person so it doesn’t become ‘abnormal’. How should a doctor be tackling the mind health of a subject when treating the disease? I think these kind[s] of activities and many others [are] going on, (for example) we have courses going on at Harvard University and activities being done by the Indian Psychiatric Society.

SK: These are all exciting avenues and are useful pieces of information to us. We also have the current podcast, which is another source of getting authentic information on mind–body medicine. Dr. Vaishali, it has been great learning from you. I have learned lots about mind–body medicine and suddenly this picture of MBM (mind–body medicine) becomes clear in my mind. Would you like to share any key take-home messages with our audience?

VD: Yes, I think the major key take-home message for today is that one needs to deal with health holistically. For any disease, holistic health is to be taken into consideration. In diabetes, mind health in an unmet need. One needs to attend to this unmet need and we know that nutrition, behaviour change and weight management are cornerstones for diabetes management. But we also know that they are entirely mind dependent. If we don’t tackle the mind of the patient, probably you are not getting the benefit of the control of these elements. We need to understand the psychology of the behaviour of our patients and try to implement behaviour change. This behaviour change will help the patients’ unregulated mind control and autonomic control and activation of the sympathetic activity of the patient, which in turn will help the control of the disease and decrease the complication rates and improve the health outcome. To doctors, I would like to say that it is important to be sensitized to this aspect, you need to sensitize yourself as doctors, sensitize your patients to this aspect and sensitize families of the patients. They need to understand the importance of psychological screening and intervention of these mind–body techniques at a personal level, at community level. As good as the glycaemic control is, the mind health of the patient also matters. It is a misconception that mind–body medicine cannot be done. It is only 10 min of practice a day maybe at your clinic, house or office and that is going to work a long way for years together to improve your mind health and disease outcome. Finally, we have to explain to our diabetes patient that if they don’t mentally overpower the disease... the disease is likely to overpower them.

SK: So the mind, Dr. Vaishali, is a mirror to our body health but is also a means of modifying our body health, that is one thing I have learned from you. The second thing I have learned is the mind is too important to be left to the mind doctors, the psychologists and the psychiatrists. We have to take care and why should we wait for somebody’s mind to become
diseased? We can protect a healthy mind and we can promote a healthy mind. We can empower it to protect and promote good health in the body and once we understand this ourselves, once we sensitize ourselves, we will be able to sensitize our patients and the public at large. Our peers, our patients, the public, the policy makers and politicians, if we all speak with the same language to them and tell them that the mind and the body are two sides of the same coin—you cannot view them separately, or distinctively—then I think things will be half done. The other half, once we introduce the concept of a healthy mindstyle (your words, Dr. Vaishali, thanks for that), and once we explain how to go to a mind gym—and the beauty of going to a mind gym is it doesn’t cost money. You don’t have to get on the tube and travel, you can do it right at home or in your office. You can do it when lying down or when going for a walk in the park. Once you activate the mind gym you will become strong and you will be able to overpower diabetes and other non-communicable diseases we are facing today.

ACKNOWLEDGEMENTS

Funding. No funding or sponsorship was received for this article. No Rapid Service fee was received by the journal for the processing of this article.

Authorship. The named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship for this article, take responsibility for the integrity of the work as a whole, and have given approval for this version to be published.

Author Contributions. Podcast is designed, conceived and interviewed by Dr. Sanjay Kalra and Dr. Vaishali Deshmukh has written, proof-read and edited the transcript and has answered the interview questions in the podcast.

Disclosures. Sanjay Kalra and Vaishali Deshmukh have nothing to disclose. Since the completion of the podcast, Sanjay Kalra is now also affiliated with University Centre for Research and Development, Chandigarh University, Mohali, Punjab, India.

Compliance with Ethics Guidelines. This article does not contain any studies with human participants or animals performed by the author.

Open Access. This article is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License, which permits any non-commercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article’s Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article’s Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc/4.0/.

REFERENCES

1. Balhara YP, Kalra S. Psychiatric disorders in diabetes. Screen. 2013;1:51–2. https://doi.org/10.4103/2230-8210.85579.

2. Shukla R, Gupta M, Agarwal N, Bajpai A. Mindfulness meditation as adjunctive therapy to improve the glycemic care and quality of life in patients with type 1 diabetes. Med Sci. 2021;9(2):33. https://doi.org/10.3390/medsci9020033.

3. Deshmukh V, Deshmukh P, Phadke S, et al. Abstract# 1181003: assessment of mind health of endocrine patients using a ‘2 minute mind health questionnaire (MHQ)’: a case control study. Endocr Pract. 2022;28(5):S57–8.