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**MONOGRAPH ON**

**“ROLE OF BIOPSYCHOSOCIAL APPROACH IN  
HEALTH PROFESSIONS EDUCATION”**

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## 1. Introduction:

The simple definition of “Health” was referred to absence of objective signs and subjective symptoms <sup>(1)</sup>. Whereas WHO defined Health as a “state of complete physical, mental and social well-being and not merely absence of disease or infirmity” <sup>(2)</sup>. In the traditional point of view, the health care was considered as a disease-based approach which defines it as absence of disease <sup>(3)</sup>. This biomedical model showed marked success in growth of the medical field with much advancement. However, it did not address the complexities of individuals towards illness <sup>(4)</sup>. While the important relation between the mental aspects of human experiences and context of culture and society is undeniable, the disproportionate emphasis of the biological model has persisted into the present day.

In mid-20<sup>th</sup> century, most scientists discussed the illness as disease utilizing the biomedical model which is a reductionist approach. <sup>(5)</sup> The biomedical approach which is proposed by Willis and Elmer <sup>(6)</sup> and Putz – Anderson <sup>(7)</sup> considered the illness as physiological dysfunction that could be recovered by fixing the body. Therefore, the biomedical approach focused on diagnosing and treating the pathogens to get rid of disease as supported by the studies of Mazzotta <sup>(8)</sup>. He strongly supported the biomedical model as it is evidence-based practice with measurable outcome; this has been a preferred one to explain diseases, their pathogenesis by doctors, pharmaceutical industry and insurance agencies for some specific reasons; 1. The biomedical model was easy to understand, experiment upon, could be modulated and could provide consistent results. 2. Easy generalization of results and observations about certain diseases, conditions or new treatments. Though this model is excellent to explain the physical and mental disorders on the molecular and cellular levels, the main drawback of this model is its inability to consider the possible causative relationship of the patient’s psychology or the significance of the social environment on the patient’s condition. Therefore, this model was felt to be dehumanizing to the patients as seen by some psychiatrists and physicians in the 1970s. The main limitations are dualism, reductionism.

- **Dualism:**

Despite the human being consists of body and mind, the biomedical model focused on the real body and totally ignored mind of the patient which in view of Engel, sensitized him to talk the biomedical model as dehumanizing. It was discussed that biomedical model focuses on body as it was easy to experiment and learn when compared to mind. Due to this difference, it was difficult to explain how different emotions like fear, anger and sadness could influence the physiological and pathological status of an individual.

- **Reductionism:**

Engel criticized regarding the biomedical model as it is more in favour of reductionism which favors towards objectivity rather than subjectivity. The humane domain is best assessed subjectively rather.

There exists a connection between gene expressions and environment factors. It states therefore, an individual's life style, eating habits, exercises, stress, sleep pattern, attitudes, beliefs, emotions, social relationships, pollution, and toxicity contributes a significant part in modifying epigenomes <sup>(9)</sup>. It is paramount to be cognizant of an individual's psychological well-being of stress, anxiety, depression in regard to his physical health. Further, incorporating not only psychological aspects, but also socio-cultural perspective like social norms, cultural nuances, in the patient treatment is important. Moreover, culture is an important factor of life that influences both patterns and perceptions of physical and mental health especially between those with vastly different physical and socio-cultural norms like India. we, have been brought up within the cultures and internalize the variations by deep understanding including different models of how our body works and the process of disease. <sup>(10)</sup> For these reasons, there should have been an interdisciplinary approach to understand the various aspects of health. In fact, recent research and discussions on the relation between the mental well-being and physical health with society and culture fosters the need for the accountability for various human experiences with respect to the social factors. This change in perspective is known as "Biopsychosocial approach". <sup>(11)</sup>

This mandated the way for a new model making health sciences as more humane, called “Biopsychosocial model”.

Biopsychosocial model includes Biopsychosocial approach is a perspective that considers three main domains that contribute to human functioning and experiences; biological, psychological and social. <sup>(12)</sup> This approach emphasizes that physical health, mental health, and traditional social factors such as relationships, socioeconomic status, and cultural background all work together to shape human behavior and well-being. By acknowledging the importance of these multiple factors, the biopsychosocial approach takes a more holistic view of human functioning, and seeks to identify and address the multiple ways in which these factors can impact a person's life. This approach is often used in healthcare and psychology to develop comprehensive treatment plans that consider various aspects of a person's health and well-being viz., biological, psychological and factors.

### **Biological factors:**

The possible ways in which biological factors are integrated into the biopsychosocial approach in medical curriculum include:

- **Understanding anatomy and physiology:** Medical curriculum that incorporates a biopsychosocial approach helps students develop a deep understanding of the structure and function of the human body. This includes an understanding of how the body's biological systems work together to maintain homeostasis.

- **Identifying genetic and epigenetic factors:** The biopsychosocial approach recognizes that genetic and epigenetic factors play a role in shaping health and illness outcomes. Medical curriculum includes education on how to identify patients at risk for diseases influenced by these factors and consider management options.

- **Investigating cellular and molecular mechanisms:** Medical curriculum that incorporates the biopsychosocial approach also involves understanding cellular and molecular mechanisms underlying biological processes.

- **Addressing medical interventions and its side effects:** Medical curriculum that incorporates a biopsychosocial approach includes education on medical interventions.

Students learn about drugs, surgical interventions, and other treatments and the impact on health outcomes. Therefore, the integration of biological factors into the biopsychosocial approach in medical curriculum is critical for preparing healthcare professionals to provide patient-centred care that considers an individual's comprehensive health history.

### **Psychological factors:**

Some of the ways in which psychological factors are integrated into the biopsychosocial approach in medical curriculum include:

- **Understanding the link between mental and physical health:** Medical curriculum that incorporates a biopsychosocial approach helps students understand the complex interplay between mental and physical health. This includes developing an understanding of how psychological factors such as stress, anxiety, and depression can impact physical health outcomes.
- **Developing skills in effective communication:** Effective communication is a critical skill for healthcare professionals, particularly when working with patients who may be experiencing psychological distress or mental illness. Medical curriculum that includes training in effective communication helps students develop the skills they need to navigate these challenging situations.
- **Identifying risk factors for mental health problems:** Medical curriculum that integrates psychological factors recognizes that certain risk factors can put individuals at increased risk for mental health problems. This includes understanding the impact of trauma, adverse childhood experiences, and substance abuse on mental health outcomes.
- **Providing mental health education and resources:** Medical curriculum that includes a biopsychosocial approach recognizes the importance of providing students with education and resources related to mental health. This includes training in the identification and management of mental health disorders, as well as resources for seeking support and treatment.

Therefore, the integration of psychological factors into the biopsychosocial approach in medical curriculum is critical for preparing healthcare professionals to

understand and effectively address the complex needs of patients and provide holistic patient-centred care

### **Social factors:**

The biopsychosocial model recognizes that social factors play a critical role in the health and well-being of individuals. Social factors refer to the environmental and social contexts in which individuals live, work, and interact. These factors can influence a person's physical, mental, and emotional health, as well as their behaviors and attitudes toward health. Social factors that may be considered in the biopsychosocial approach include:

1. **Social support** - The quality and quantity of social relationships a person has can impact their health and well-being. Studies have shown that individuals with strong social support networks have better physical and mental health outcomes.

2. **Socioeconomic status** - Socioeconomic status can influence health outcomes through a variety of mechanisms, including access to healthcare, education, housing, and food.

3. **Culture and ethnicity** - Cultural and ethnic differences can influence health outcomes through differences in beliefs and practices related to health, as well as differences in access to healthcare and other resources.

4. **Stress and trauma** - Social factors like stress and trauma can impact a person's physical and mental health, as well as their behavior. Chronic stress has been linked to a variety of health outcomes, including hypertension, cardiovascular disease, and depression. The role of social factors in the biopsychosocial approach is that they must be considered alongside biological and psychological factors to provide a comprehensive understanding of an individual's health and well-being. Hence, in practice, this may involve addressing social determinants of health, such as poverty, limited education, and access to healthcare, as well as providing support for individuals to manage stress, anxiety, and other social or emotional challenges.



Therefore, by introducing the biopsychosocial approach in medical curriculum, students can better understand the importance of a multidisciplinary approach and develop the skills necessary to work collaboratively as part of a wider healthcare team.

## II. Difference between biomedical and biopsychosocial approach <sup>(13,14,15,16,17,18)</sup>

Factors	Biomedical model	Biopsychosocial approach
<b>Causes of illness</b>	Biological factors like bacteria, viruses, genetic factors and chemical imbalance	Biological (Bacteria, virus), psychological (beliefs, behavior), and social (unemployment)
<b>Responsibility</b>	The external force or factors are responsible for internal changes not the victimized individuals	Individuals are responsible
<b>Mode of treatment</b>	By vaccination, chemotherapy, radiotherapy, surgery which are focusing on changing the physical state of body	The individual as a WHOLE should be treated e.g: behavior change, change in beliefs and coping strategies and compliance with treatment regimen.
<b>Professional treating illness</b>	Health professional is responsible for the cure of illness	The individual as a WHOLE should be treated., not just only physical illness; Eg: taking medications or changing the behavior
<b>Relationship of health and illness</b>	Health and illness are considered as separate and qualitatively different; i.e. the individual is either healthy or ill. There is no continuum between these two.	Health and illness are the continuum. Therefore, the individual progress along this from health to illness or vice versa

<b>Relationship of mind and body</b>	The mind and body function independently of each other	As they are interdependent, the focus is on the interaction between mind and body
<b>Role of psychology in health and illness</b>	Illness might have psychological consequences (eg. Cancer patients may prone for psychological depression)	Psychological factors may predispose or be present as a consequence of illness

Therefore, the BPS approach well recognizes the complexity of health and illness as the result of multiple interrelated factors that go beyond the purely either biological or medical perspectives. Hence the medical students or health care professionals are need to be trained to understand the importance of not only treating the physical symptoms of patient but also to consider their psychological and social context while making diagnosis and treatment plans. In this respect, AETCOM initiative of Competency based Medical Education incorporates the BPS approach at its root, treating the patient as a whole in a holistic way.

### **III. Importance of biopsychosocial approach in Health professions Education:**

In the early 20<sup>th</sup> century, there were few physicians provided their patients empathy and support in addition to their usual treatment. In due course, with advancement of science and technological innovations, the focus of biomedical approach eroded the humanistic behavior of physicians. <sup>(19)</sup> Institute of Medicine in 2004 reported that health professions education is not complete without training the students on the behavioral and social factors in health care delivery system. <sup>(20)</sup> Due to voluminous syllabus and work overload, the curricula become more challenging for medical students and professional. To evidence this, between 2010 and 2019, around 358 suicides where 7 out of 10 deceased were less than 30 years of age <sup>(21)</sup>. The literature shows <sup>(22)</sup> 47.7% students suffered from anxiety, 35.1% depression, and 24.7% suffered with both during their course. <sup>(23)</sup> Also, high level of stress, 49.9% among 475 students was reported <sup>(24)</sup>. It is commonly noticed that MBBS students

find themselves with episodes of mood disturbances, peer pressure, cutthroat competition and fear of missing out during their course tenure. <sup>(23)</sup>

The BPS approach was inferred to have more positive aspects of approaching illness in a holistic and integrated approach and humanistic in delivery; therefore, reducing the mind body split which was a major issue in the traditional curriculum. <sup>(25)</sup> John et al in 2008 compared the quality of training of residents before and after the inclusion of biopsychosocial factors in their curriculum <sup>(26)</sup>. They concluded that the inadequate training of them on the psychosocial aspects was their major obstacle preventing to deliver effective clinical practice and those who trained gave them higher rate on their practices. <sup>(26)</sup>

The biopsychosocial approach emphasizes the importance of recognizing the complex interplay between these factors and tailoring interventions to address the unique needs of each individual. The studies extended to find out on what mechanisms were underlying the individual's presentation to inculcate explorations of the clinical problem that give rise to it and their inter-relatedness. <sup>(11)</sup> The BPS approach involves various behavioral and social sciences that include diverse aspects viz., interviewing skills, medical ethics, sociology, and anthropology and psychology introduction. <sup>(27,28,29)</sup> Many research reports demonstrated cessation of smoking <sup>(30)</sup> and reduction of stress, adverse consequences of medical procedures following behavioral interventions <sup>(31)</sup>. When compared with biomedical model, concepts of BPS approach are new and their content is still adjustable to the needs of students and to the changes of clinical practice <sup>(32,33)</sup>. Moreover, the importance of incorporating this approach into medical curriculum has to be thought of as:

### **1. Patient-centered/ student centered care:**

The biopsychosocial approach places the patient/ student at the centre of care, recognizing that their unique characteristics and needs are critical to understanding their health and well-being. By incorporating this approach into medical education, future healthcare providers can learn to provide personalized care that addresses not just the patient's physical symptoms but also their emotional, social, and cultural needs.

### **2. Holistic view:**

This approach provides students with a more comprehensive view of health and illness by considering the whole person rather than just their physical symptoms. By understanding the interplay between the biological, psychological, and social factors that influence health, students can develop a more nuanced and holistic understanding of their patients' health needs.

### **3. Better patient / student outcomes:**

A growing body of research suggests that the biopsychosocial approach leads to better patient/ student outcomes by improving communication between healthcare providers and patients, increasing patient satisfaction, and reducing healthcare utilization.

### **4. Addressing social determinants of health:**

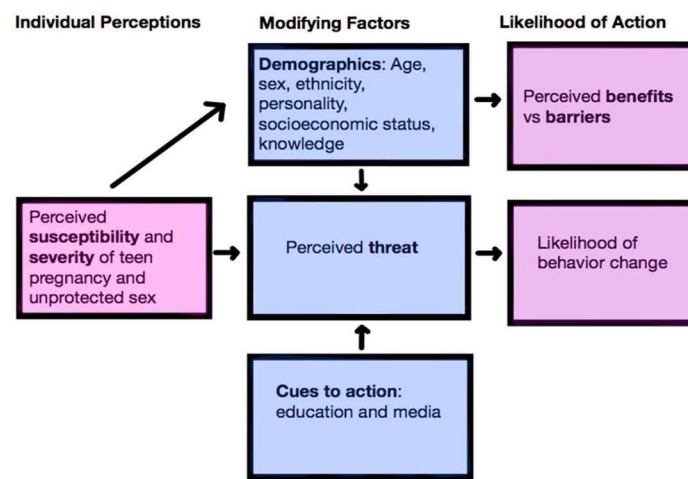
Many health outcomes are shaped by social determinants, such as income, education, housing, and access to healthcare. By incorporating the biopsychosocial approach into medical education, students are better equipped to address the social determinants that influence their self and patients' health as well. Nevertheless, students after their programme completion, in their field placements, they are more expected to utilize their strengths and skills and to manage their own problems and limitations while assisting others simultaneously.<sup>(34)</sup> On studying the experiences of residents in US medical school, John et al recommended the medical educators and policy makers on inclusion of BPS model having a significant influence of psychosocial factors in human health and well-being.<sup>(26)</sup>

Hence all three biological, psychological and social factors such as inactivity, dietary patterns, stress, sleep, socioeconomic status, relationships etc are of interest and must to be taught to the students as well as educators in the Health Professions Institutions.

#### IV. Models of biopsychosocial approach applicable for students and faculty in HPI:

(35,36)

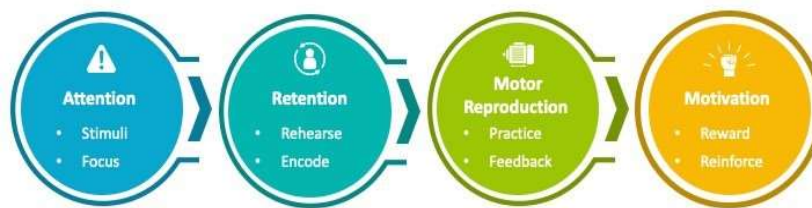
- **The Health Belief Model:** This model suggests that people's beliefs about health and behaviors are influenced by their perception of the threat, benefits, and barriers associated with their behaviour. Therefore, this approach could be helpful for students who want to adopt healthy behaviors such as studying regularly, managing stress levels or staying physically active. <sup>(37)</sup>



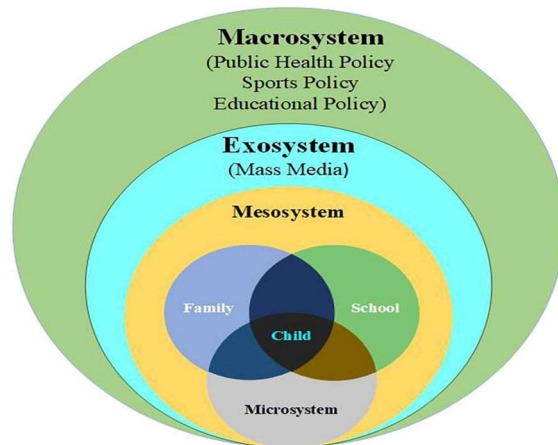
- **The Social Learning Theory:** This model proposes that people learn behaviours through observation, imitation, and reinforcement. In the context of students, this approach suggests that they could learn from their peers or role models and adopt behaviours that are modeled by them. <sup>(38)</sup>

#### SOCIAL LEARNING

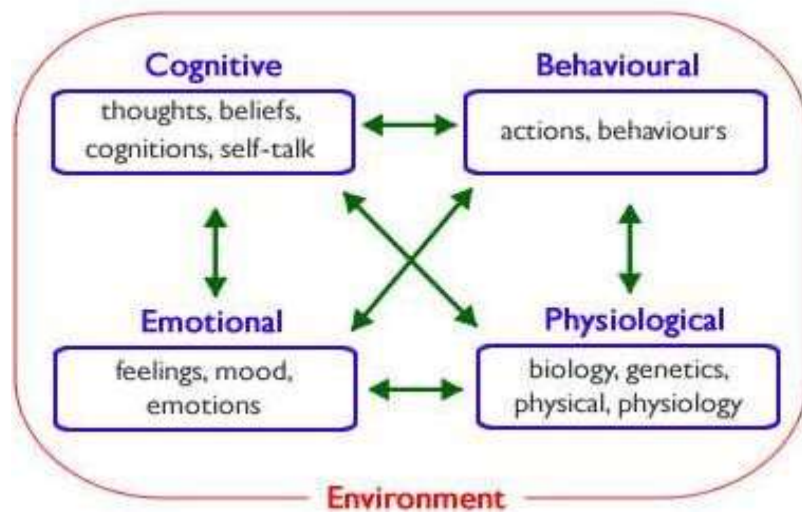
Social Learning Theory



- **The Ecological Systems Theory:** This model looks at how people are influenced by the environment around them, including their family, school, and community. Hence, this approach could be relevant for students who are dealing with issues such as bullying, social exclusion, or discrimination. <sup>(39)</sup>



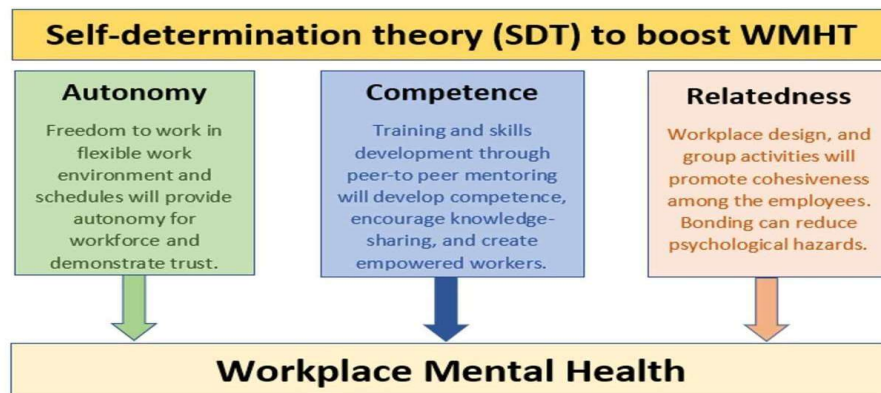
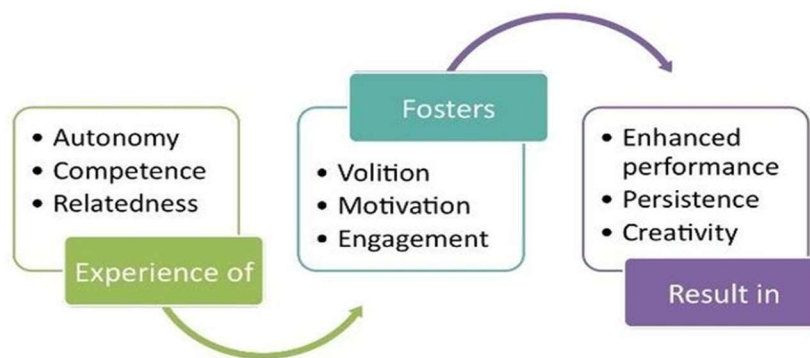
- **The Cognitive-behavioral Model:** This model suggests that people's thoughts, behaviours, and emotions are interconnected, and changing one can lead to changes in the others. This approach could be applicable for students who are struggling with academic performance or dealing with anxiety and depression. <sup>(40)</sup>



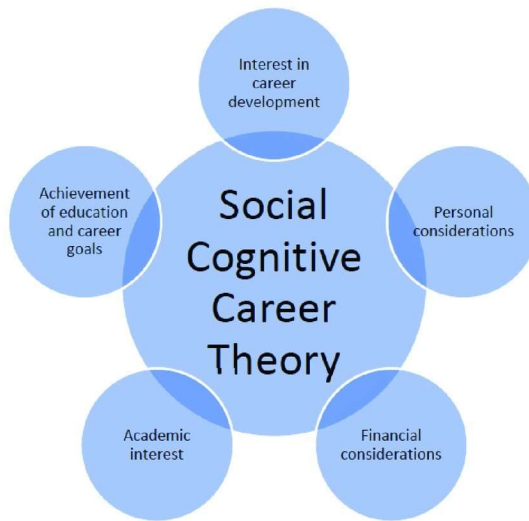
- **The Self-Determination Theory:** This model focuses on the intrinsic motivation of individuals and their need for autonomy, competence, and relatedness. It is particularly relevant when designing learning experiences that can motivate and engage students in the educational process. <sup>(41)</sup>

## Self-Determination Theory (SDT)

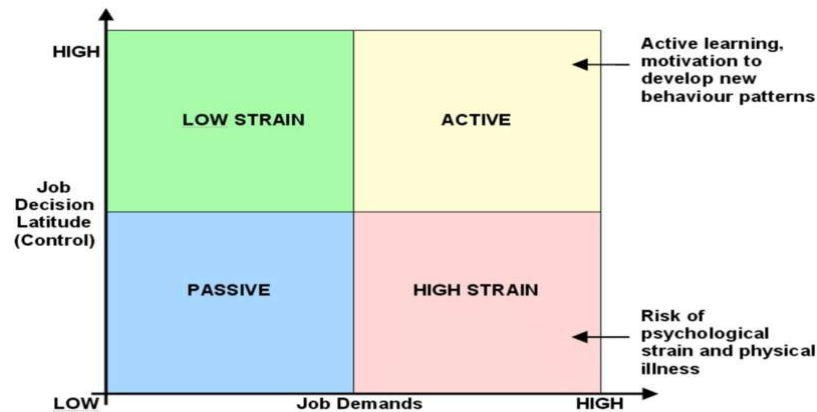
(Ryan & Deci, 2000)



- **The Social Cognitive Career Theory:** This model proposes that people's career choices are influenced by their behaviour patterns, personal factors, and the social environment. When applied to educators, this approach could be used to design programs that can help students explore career paths and make informed decisions. <sup>(42)</sup>

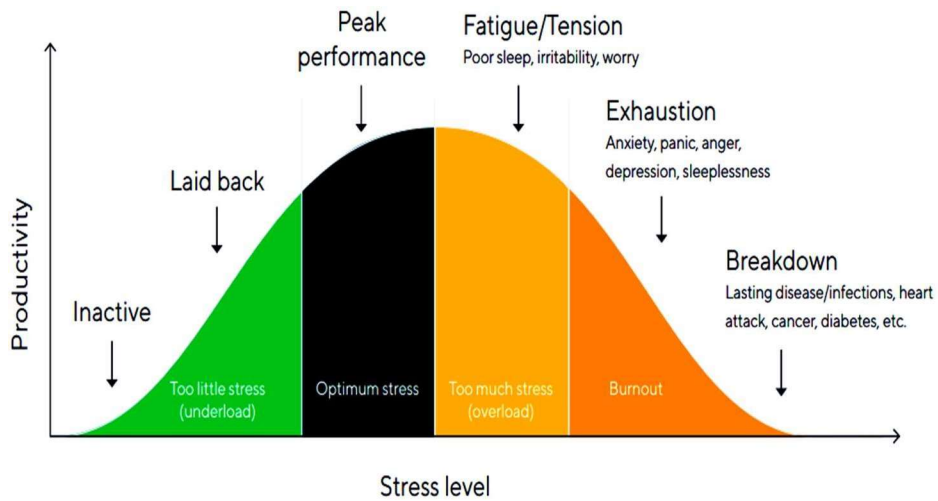


- **The Job Demands-Resources Model:** This model suggests that people's job performance and well-being are influenced by the demands and resources of the work environment. In the case of faculty, this approach could be applied to design programs that can support their well-being and productivity, and prevent burnout. (43)



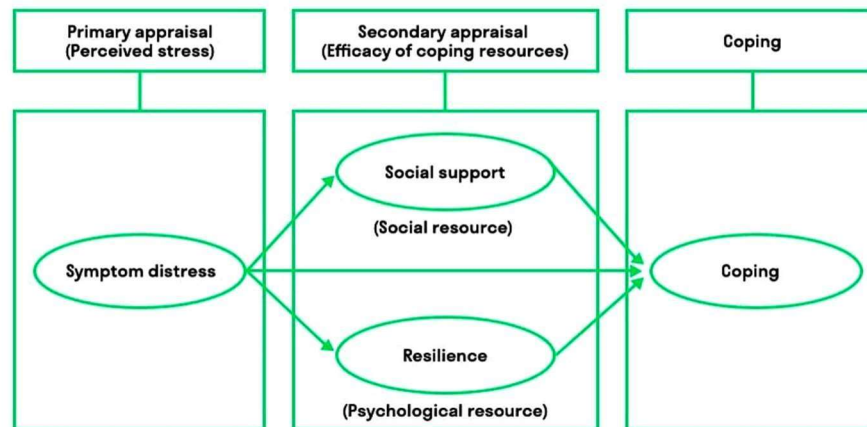
- **The Transactional Model of Stress and Coping:** This model looks at how individuals perceive and respond to stressors in their environment. For faculty educators, this approach could be used to design programs that can help them cope with stress and build resilience, particularly in times of increased workload or uncertainty. (44)





### The Transactional Theory of Stress & Coping Model

toolshero



### V. Relevance of biopsychosocial approach in Health professions Education:

In the recent four decades, the fundamental concept of Health has been propagated more towards transformation from just mere “absence of illness” to “understanding the concepts rooted in psychosocial aspects of health and illness”<sup>(45)</sup>. A study on the risk factors pertaining to ischemic heart disease like hypertension and hypercholesterolemia established that the psychosocial factors have a equal impact as do physiological disruptions.<sup>(14)</sup> Herman speculated that the biopsychosocial approach actually enhanced the

need for a translational, more pragmatic model to train the health professional as “bio psychosocially” attained practitioner<sup>(46)</sup>. Kontos<sup>(47)</sup> had imposed that a single model would not be suitable to address the complexity of contemporary medicine. Many western authors emphasized the absolute need of Biopsychosocial model in their academic contributions like “further developments”<sup>(48)</sup>, “teachable habits of mind” to showcase realistic connection between BPS vision and clinical reality<sup>(49)</sup>; “addendum”<sup>(50)</sup> and “ways to realize” the BPS model<sup>(51)</sup>. Very recently, Smith et al<sup>(52)</sup> recommended more pertinent “solution” by addressing some questions: 1. Exactly How do the health professionals efficiently identify essential biopsychosocial data when caring for an individual student or patient at a given point of time?<sup>(52)</sup>. Therefore, all the above studies suggested that the biopsychosocial could be operationalized by integrated two evidence based, behaviorally defined patient centered interviewing methods “integrated patient- centered and doctor centered interview model” and “four habits interview model”<sup>(52)</sup>. Thus, there is greater concern to apply In the same way, many critics and changes in Competency based medical Education also reflect this transformative trend<sup>(53)</sup> which was primarily biomedical focused curriculum to more encompassing curriculum incorporating learning experiences in biopsychosocial approach expecting health professions educators to appropriately respond to the increasing need of biopsychosocial competency of future health professionals in many countries across the globe<sup>(54,55)</sup>. In recent years, there is much focus on adolescent health and medicine<sup>(56,57,58)</sup> addressing the challenges associated with the practical implementation of biopsychosocial model, because of the following common encounters faced.

**Examples of students encounters that needs biopsychosocial approach in Health Professions Institution:**

- A student suffering from chronic headaches may require a biopsychosocial approach to identify and treat the underlying cause. A medical professional may assess the student's physical health, psychological history, as well as their social support system to determine the potential triggers for the headaches.

- Students with communication barriers as they must understand the patient's language and culture to deliver appropriate care. Because communication barriers can result in misdiagnosis, negative health outcomes and ineffective doctor – patient relationships.

- Students presenting with mental health conditions such as anxiety or depression may require a biopsychosocial approach to determine the most effective treatment. A medical professional may need to evaluate the student's medical history, social support network, and psychological state to develop a personalized treatment plan.

- Students with disabilities may require a biopsychosocial approach to facilitate their access to healthcare and education. A medical professional may need to work with the student's family and educators to ensure that accommodations are made for the student to receive the best possible care.

- Students with substance abuse and addiction issues may require a biopsychosocial approach to help them overcome their conditions.

- Poverty and health education access: poverty can impact students' ability to access health education, afford and prioritize their success. A medical professional may need to assess the student's physical and psychological health, as well as their social support network, to develop a comprehensive plan that includes medical, psychological, and social interventions

**Examples of faculty encounters needs biopsychosocial approach in Health Professions Institution:**

-Faculty members may experience chronic physical conditions such as back pain or migraines, which may require a biopsychosocial approach to management. Therefore, assessment of psychological and social factors such as stress levels, workload, and work environment can help identify triggers and implement holistic treatment options.

- Faculty members dealing with high levels of stress or burnout may need a biopsychosocial approach to management. Identifying sources of stress and implementing stress reduction techniques, in addition to medical interventions, can improve their overall well being.

- Faculty members dealing with mental health conditions like anxiety or depression may need a biopsychosocial approach to treatment. Medical professionals may need to consider the faculty member's social support network and work environment to design a comprehensive treatment plan.
- Faculty members with disabilities may require a biopsychosocial approach to ensure they can perform their job with appropriate accommodations. It may require medical professionals to work in concert with human resources departments to identify appropriate accommodations for the faculty member.
- Faculty members with substance abuse and addiction issues may require a biopsychosocial approach to treatment and support. It may require the intervention of medical, psychological and social work professionals to overcome the underlying causes of addiction and provide comprehensive support throughout the recovery process

To be more specific, the biopsychosocial approach is critical in inter-professional health settings, where a team of medical professionals from different disciplines works together to provide care to a patient. The biopsychosocial approach recognizes that physical health is not independent of psychological and social factors, and therefore, health care providers from different disciplines need to approach patient care collaboratively, considering all of these factors. For example, a patient with diabetes may need the involvement of a doctor, a nurse, a dietitian, and a social worker in their treatment plan. Besides providing medication and medical management, the team may also need to consider the patient's emotional and mental health, ensure they stick to a healthy diet, and address any social challenges that may be affecting their ability to control their blood sugar levels. By doing this, the team can create a comprehensive treatment plan that addresses the patient's physical, psychological, and social needs, improving the patient's health outcomes and overall well being

To emphasize more on it, the biopsychosocial approach has been particularly relevant during the COVID-19 pandemic, which has highlighted the importance of considering multiple factors in understanding the impact of the disease on individuals and communities. (59,60) The pandemic has disrupted not only physical health but also social

and psychological wellbeing of people worldwide, and a comprehensive approach is needed to address these effects. At the biological level, the focus has been on understanding the patho-physiology of COVID-19, its clinical features, and the development of vaccines and other treatments. However, the pandemic has also had significant social and psychological impacts such as social isolation, job loss, and anxiety. The pandemic has shown that psychological factors, such as the fear of infection and the stress of social isolation, can have a significant impact on people's health. Social factors such as poverty and inequality have also played a crucial role in the spread of COVID-19 and its disproportionate impact on certain communities.<sup>(61)</sup> Moreover, the pandemic has highlighted the need for rapid technological innovation and extensive social support systems to manage the spread of the virus, monitor the progression of the disease, and provide effective treatments. It has enabled healthcare professionals to take a broader range of factors into account, emphasizing the need to address not just physical health but also social and psychological wellbeing. Particularly relevant in the present time of the COVID-19 pandemic are the clear demonstrations of the roles of multiple factors – biological, psychosocial and sociopolitical – that combine in complex ways to determine exposure, vaccination status, population prevalence, individual cases, course, mortality, and longer-term recovery and quality of life. Therefore, the biopsychosocial approach has played a critical role in understanding the COVID-19 pandemic's complexity and developing a comprehensive response.

Therefore, to practice the biopsychosocial approach in their practice, the Health Professionals should;

- Recognize the relationships of these biopsychosocial factors are central core to provide health care and curriculum
- Adapt self-awareness strategies as a diagnostic and therapeutic tool
- Elicit exclusive elaborate history in the context of life circumstances
- Decide which aspects of biological, psychological and social domains are most important to understand and promote health of an individual

- Provide multidimensional approaches

Having realized the potential of the biopsychosocial perspective and ability to promote theory, practice through its use still remains unexplored much. Jerry expressed his concerns in developing trans disciplinary collaboration; striving for developments in both theoretical and practical aspects by cultivating multilevel, multi system and multivariate phenomenon of health processes and appropriate curriculum and research for the next generation health professionals. <sup>(31)</sup>

## **VI. Origin and History of the biopsychosocial approach in Health Professions:**

The origin of BPS model has its root in psychosomatic medicine, founded by Franz Alexander. The biopsychosocial concept has its birth history since 1950s; the term “biopsychosocial” was coined a long before Engel in 1954 by Roy Grinker, a neurologist and psychiatrist who was analyzed by Freud. To emphasize “bio” against psychoanalytic orthodoxy, Grinker applied it to psychiatry. Whereas, Engel applied it to medicine. <sup>(62)</sup> The biopsychosocial approach was first introduced to the medical community in a paper published by George Engel in 1977, titled "The Need for a New Medical Model: A Challenge for Bio-medicine" The paper challenged the traditional biomedical model of healthcare, which focused mainly on the physical aspects of illness and the treatment of disease through medical interventions. Engel argued that this approach was too narrow and limited in its perspective, and that medical education needed to expand to include a more holistic view of patients' health and well-being. His proposed approach, known as the biopsychosocial model, included consideration of the biological, psychological, and social factors that influence health outcomes. Engel stressed that medical education needed to include training in communication and interpersonal skills to enable physicians to understand and diagnose the complex interplay between biological, psychological, and social factors in illness. He believed that healthcare providers needed to learn how to work collaboratively with patients to develop a comprehensive and personalized care plan that addressed their physical, mental, and social needs. He also claimed that the biopsychosocial approach was a “blue print for research, a framework for teaching, and a design for action in the real world of health system.”<sup>(11)</sup> Since the publication of Engel's paper, the

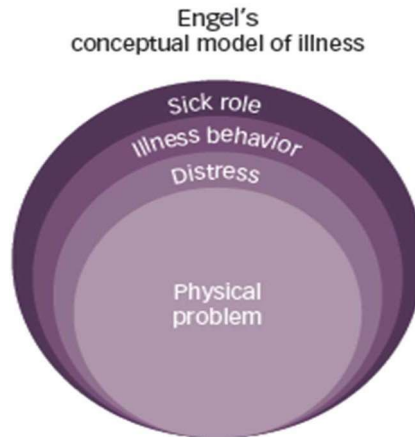
biopsychosocial model has gained widespread acceptance in medical education and practice. It has become a fundamental principle of the patient-centered approach to healthcare, emphasizing the importance of understanding patients' unique circumstances and integrating clinical and social interventions to promote overall well-being.

The biopsychosocial approach was initially met with skepticism by many in the medical community. However, over time, it gained acceptance as research accumulated showing the importance of psychological and social factors in health and illness. In the 1980s, medical schools began to incorporate the biopsychosocial approach into their curricula. Today, the approach is widely taught in medical schools and is considered a fundamental principle of patient-centered care. The biopsychosocial approach has also influenced the development of other interdisciplinary fields, such as behavioral medicine and health psychology, which seek to integrate biological, psychological, and social approaches to understanding and treating illness. Several models of the biopsychosocial approach are used in healthcare, since its origin has been postulated.

### **1. Engel's Biopsychosocial Model:** <sup>(11)</sup>

This model was developed by George Engel and is a comprehensive framework for understanding health and illness. It proposes that there are three factors that interact and influence health outcomes: biological, psychological, and social. According to the model, health and illness are not purely biological states but are also influenced by psychological and social factors. For example, chronic stress or negative social relationships can impact physical health outcomes such as heart disease, while psychological factors such as depression or anxiety can affect the course of a disease. The model recognizes that healthcare providers need to take a holistic approach to patient care that considers all three factors. It emphasizes the importance of understanding the patient's social and psychological factors, not just their biomedical markers. Engel's Biopsychosocial Model has had a significant impact on medical practice and healthcare policy. It has led to the recognition of the need for a more comprehensive approach to healthcare, considering the physical, psychological, and social factors that contribute to disease and health outcomes. It has also led to the development of multidisciplinary teams and the incorporation of non-

biomedical professionals, such as psychologists and social workers, into the healthcare team.



## **2. White and Epston's Narrative Therapy Approach: <sup>(63)</sup>**

White and Epston's Narrative Therapy approach is a type of psychotherapy that focuses on the way individuals and families make meaning of their experiences and stories. It aims to help patients to reframe their experiences and find new ways of understanding and coping with their illness. It was developed in the 1980s by Michael White and David Epston, both psychologists from New Zealand. Their approach emphasizes the importance of exploring narratives or stories that individuals and families use to give meaning to their lives and experiences. The Narrative Therapy approach recognizes that people's problems and challenges are often rooted in the way they understand and interpret their lives and experiences. The approach utilizes dialogue, conversation, and storytelling techniques to separate individuals from their problems and to explore new stories that can lead to healing and growth. White and Epston's approach to Narrative Therapy also emphasizes the importance of cultural and social contexts in shaping the narratives; individuals create about themselves and their experiences. Therefore, this therapy approach aims to help individuals identify and challenge the dominant cultural narratives that may be contributing to their problems and to create new stories that empower them. The Narrative Therapy approach employs several techniques to help individuals or families create new meanings and narratives. These techniques include:



1. Externalization - The separation of individuals from their problems to create distance and encourage a healthier relationship with their challenges.

2. Deconstruction - The examination of the dominant cultural and social narratives that shape individuals' problems and challenge their assumptions.

3. Re-authoring - The creation of new narratives that empower individuals and promote healing. White and Epston's Narrative Therapy approach has gained popularity in recent years, particularly among practitioners who work with marginalized populations. Therefore, it has been used to address a wide range of mental health concerns, including depression, anxiety, trauma, and addiction

### **3. The Calgary Family Assessment Model: <sup>(64)</sup>**

This model is often used in family therapy and takes a holistic approach to understanding families and their interactions. It considers the family's cultural beliefs, values, and communication patterns as well as the individual experiences of family members. It was developed by Lorraine M. Wright and Maureen Leahey in Calgary, Canada, in the late 1980s. The CFAM is based on a holistic and family-centered approach that recognizes the importance of understanding the family as a unit, as well as the influence of the larger cultural and social context. The model is used primarily in family therapy, nursing, and social work to assess the unique needs of families and tailor interventions to meet their specific needs.

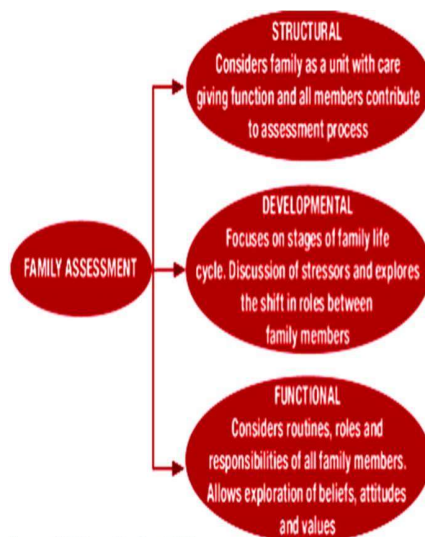
The CFAM has three main categories: structural, developmental, and functional.

The structural category includes the composition of the family, such as the number of members, their ages, and their roles within the family.

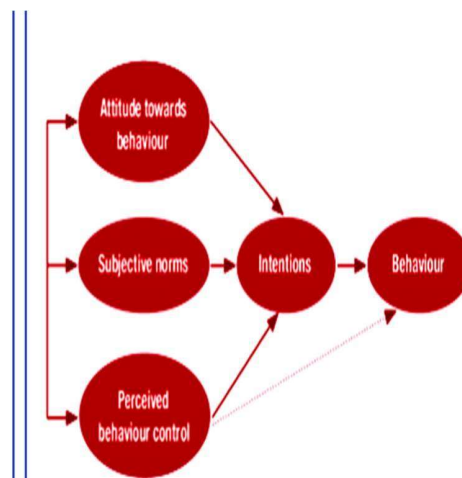
The developmental category looks at the changes and transitions the family is going through, such as the birth of a child, divorce, or the death of a family member.

The functional category looks at how the family communicates, problem-solves, and makes decisions.

In addition to these three categories, the CFAM also considers the family's cultural beliefs, values, and communication patterns. This is known as the fourth category, which is referred to as "the spiritual context". The CFAM helps clinicians to develop a comprehensive understanding of the family's strengths and challenges, which is essential for the development of effective interventions. Therefore, by understanding the family's unique needs, clinicians can help the family to achieve their goals and improve their overall well-being.



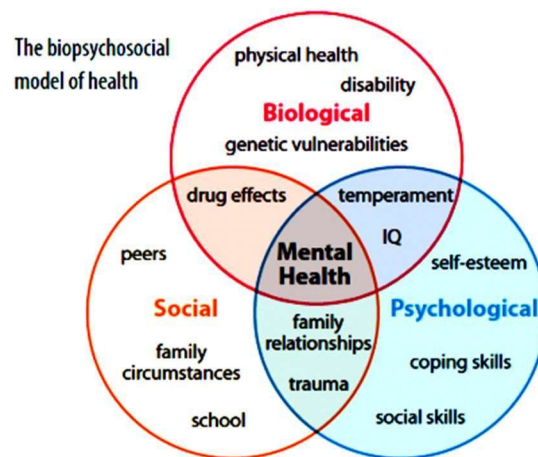
Source: Wright and Leahy (2005)



Source: Ajzen (1991)

### 3. The Integrated Biopsychosocial Model: <sup>(65)</sup>

This model emphasizes the need for collaboration between healthcare providers to address the biological, psychological, and social aspects of illness. It recognizes that each provider brings a unique perspective to patient care and that working together can improve outcomes. The integrated biopsychosocial model is a comprehensive approach to healthcare that considers the physical, psychological, and social factors that can impact an individual's health and well-being. It recognizes that health is more than just the absence of disease and that a person's overall health is influenced by complex interactions among biological, psychological, and social factors.



According to the integrated biopsychosocial model, there are three main components that contribute to an individual's health:

1. **Biological factors** - Biological factors refer to an individual's physical health and their susceptibility to illness or disease. This includes things like genetics, diet, exercise, and exposure to toxins or pathogens.

2. **Psychological factors** - Psychological factors refer to an individual's mental and emotional health. This includes things like personality traits, coping mechanisms, stress levels, and mental health disorders.

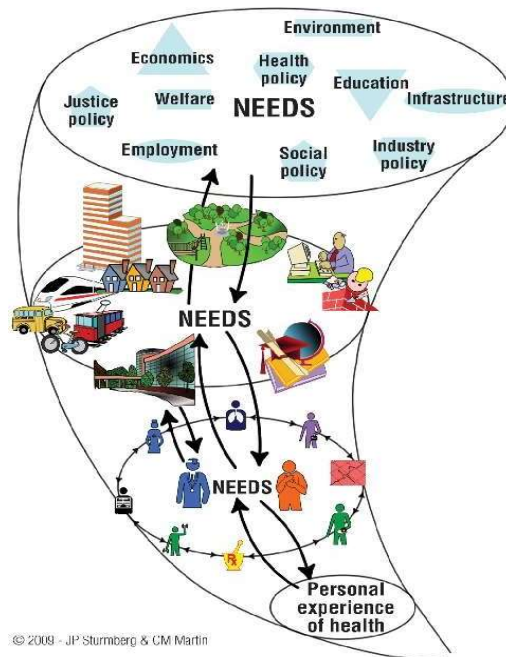
3. **Social factors** - Social factors refer to an individual's social environment and the impact this has on their health and well-being. This includes things like social support,

socioeconomic status, access to healthcare, and cultural beliefs and practices. Therefore, the integrated biopsychosocial model takes a holistic approach to healthcare, recognizing that each person is unique and that their health is influenced by a complex array of factors. It emphasizes the importance of understanding the interconnectedness of these factors and how they impact a person's overall health. In practice, the integrated biopsychosocial model may involve a multidisciplinary team of healthcare professionals, including doctors, psychologists, and social workers, who work together to provide a comprehensive approach to healthcare. This may include interventions such as medication, psychotherapy, lifestyle changes, and social support, all tailored to the specific needs of the individual.

**VII. Theories of biopsychosocial approach in medical curriculum:** There

are several theories that support its implementation in the curriculum.

1. **Systems Theory** <sup>(66)</sup>: This theory emphasizes the interconnectedness of biological, psychological, and social factors in the development and treatment of medical conditions. Systems theory sees the patient as a whole, rather than just a collection of



organs and tissues.

2. **Health Belief Model** <sup>(37)</sup>: This theory suggests that people's beliefs and attitudes about health and illness affect their behavior and decision-making. The health belief model

emphasizes the importance of understanding patients' beliefs about their condition and their treatment options.

3. **Social Determinants of Health** <sup>(67)</sup>: This theory recognizes that social and economic factors, such as income, housing, and education, can have a significant impact on health outcomes. Medical education that focuses on social determinants of health can prepare future physicians to address these factors in their practice.

4. **Patient-Centered Care** <sup>(68)</sup>: This theory emphasizes the importance of understanding the patient's perspective and involving them in their own care. Patient-centered care encourages physicians to consider the patient's social and psychological needs, preferences, and values when developing treatment plans.

#### **Principles of biopsychosocial approach in medical curriculum:**

Principles of the biopsychosocial approach that can be incorporated into medical education curricula are:

1. **Understanding the interconnectedness of biological, psychological, and social factors:** Medical students can be taught to consider the interaction between biological, psychological, and social factors in the development and treatment of medical conditions.

2. **Empathizing with patients:** Students can learn to empathize with their patients and understand the impact that illness can have on a patient's social and psychological well-being.

3. **Addressing social determinants of health:** Medical students can be trained to understand the impact that social and economic factors have on a patient's health. This may include education in cultural competency and social justice, as well as an awareness of community resources.

4. **Implementing patient-centered care:** Medical students can be taught to involve patients in their own care through shared decision-making and by integrating their preferences and values into treatment plans.

**5. Collaborating with multidisciplinary teams:** Medical education can also emphasize the importance of collaborating with a multidisciplinary team, including social workers, psychologists, and other healthcare professionals, to provide comprehensive care. Therefore, incorporating these principles into medical education can help prepare future physicians to provide more holistic and patient-centered care that considers biological, psychological, and social factors.

### **VIII. Biopsychosocial approach in Health Professions Education:**

The biopsychosocial approach has been an integral part of medical education in western countries for many years. It emphasizes addressing the biological, psychological, and social aspects of health to produce a more comprehensive approach that considers the whole person rather than simply addressing the physical disease. In western countries, medical schools have integrated the biopsychosocial approach into their curriculum by incorporating coursework that emphasizes social determinants of health and mental health topics. This coursework also focuses on how these determinants of health affect the clinical presentation and course of medical conditions. Simulation exercises are also used in medical curriculum in western countries to teach medical student's practical skills related to the biopsychosocial approach. These exercises provide an opportunity for medical students to practice applying the approach in simulated scenarios and receive feedback from experienced clinicians to refine their approach.

Moreover, western countries have begun placing greater emphasis on interprofessional education, in which medical students and clinicians collaborate with professionals from other healthcare fields (e.g., psychologists, social workers, and occupational therapists). This approach helps physicians to explore how diverse perspectives from different healthcare professionals can enhance their approach to medical care. The biopsychosocial approach is also integrated into residency and fellowship programs in western countries. This allows students to further refine their approach to patient care under the guidance of experienced clinicians in a clinical setting.

The biopsychosocial approach is an essential aspect of CANMED's framework as it emphasized the importance of holistic patient-centered care. The application of the

biopsychosocial approach in CANMED involves the integration of knowledge, skills, and attitudes of the biological, psychological, and social determinants of health into healthcare practice. The approach provides physicians with a framework to evaluate and treat patients' health with a more comprehensive approach that provides high-quality care. In CANMED, the biopsychosocial approach is included in the professional competency domain in the roles of the medical expert, communicator, and collaborator. For instance, the medical expert competency requires the integration of bio-psycho-social-spiritual models of health into the assessment and treatment of patients. Also, the communicator competency domain requires physicians to have effective and empathetic communication skills to create a trusting, supportive and therapeutic relationship with patients. Moreover, the biopsychosocial approach is essential in the collaborator competency domain, which requires physicians to work effectively in interprofessional teams to deliver comprehensive care to patients. Physicians are expected to collaborate with other healthcare professionals (such as psychologists, social workers, and occupational therapists) to deliver biopsychosocial care approaches. In conclusion, the biopsychosocial approach is a critical component of the CANMED framework. It emphasizes the importance of multidimensional and collaborative healthcare delivery approaches that provide patient-centered care that meets the holistic patient care needs. Physicians who integrate the biopsychosocial approach into their medical care practice demonstrate their commitment to improved health outcomes by considering all dimensions of patients' health. <sup>(69)</sup>

In the context of medical curriculum in India, the biopsychosocial approach is becoming increasingly important as medical education has shifted from a traditional approach to a more patient-centered care approach. The approach has been integrated into various medical schools and colleges across the country, reflecting the importance given to the comprehensive care of patients. The biopsychosocial approach in medical curriculum in India recognizes the importance of understanding biological, psychological, and social determinants of health and disease in clinical care. It is increasingly becoming essential for physicians to incorporate this approach into their medical practice to provide high-quality healthcare to patients that extend beyond the physical symptoms of illness. To address the shortcomings of health issues of students, the National Medical Commission, the

governing body of medical education system of India has framed the idea of AETCOM module in Competency based Medical education (CBME) system. <sup>(70)</sup> Medical institutions in India like AIIMS, Delhi have started integrating the biopsychosocial approach into their curriculum by offering courses and electives that provide an in-depth understanding of the approach. These courses aim to help medical students examine the multiple dimensions of healthcare delivery, including the physical, psychological, and social aspects of the patient's health. Furthermore, medical schools have incorporated clinical rotation programs in psychiatry, behavioral medicine, and other mental health settings to give students hands-on training in using the biopsychosocial approach. Such programs provide an opportunity for students to interact with patients and learn how to apply the biopsychosocial approach to patient care, conducting comprehensive patient assessment, and developing a comprehensive treatment plan.

#### IX. Comparison of AETCOM module of CBME and Biopsychosocial approach

S. No	Elements of AETCOM module (CBME)	Elements of Biopsychosocial approach
1	Awareness of self and others	<b>Psychological factors.</b> This refers to understanding emotions of self and others, empathy.
2	Effective communication	<b>Social factors.</b> This focuses on interpersonal communication and how it impacts the well-being of not only patients and family.
3	Team work and collaboration	<b>Social factors.</b> This guides to creating collaborations among health care professionals especially while handling complex situations.



4	<b>Ethics and Professionalism</b>	<p><b>All three factors., biological, psychological and social factors.</b></p> <p>They align the values and moral principles of ethics in effective practice of patient care especially during conflicts</p>
5	<b>Management of emotions</b>	<p><b>Psychological and social factors.</b></p> <p>This element is important to manage the individual as a whole.</p>

#### **X. How does the Competency Based Medical Curriculum (CBME) addresses the biopsychosocial approach in the curriculum?**

In the context of transformation towards 3<sup>rd</sup> generation health professional of 21<sup>st</sup> century, GMER 2019 <sup>(71)</sup> of India has shifted the medical curriculum from biomedical approach to biopsychosocial by incorporating AETCOM elements in the medical curriculum. The AETCOM module has been designed to impart knowledge, skills related to medical ethics, communication, professionalism, cultural competence and awareness about social determinants of health. This module consists of 54 core and 14 non-core competencies to sensitize the students to understand the importance of treating the patient as a whole, not on the ailment alone. When we analyze the biopsychosocial approach, it is even more critical in view of AETCOM initiative in medical curriculum.

- Looking into cultural competence, the AETCOM module emphasizes the cultural competence by teaching the students how to become more aware of patients from diverse cultural backgrounds and to understand the impact of cultural factors on health beliefs and practices. In the same way, the BPS approach recognizes that patients come from different cultural backgrounds, and these cultural (social) factors which can significantly impact health care outcomes by improving patient trust, satisfaction,

- When thinking of communication skills, AETCOM module expects students on effective communication skills such as active listening, empathetic communication, and motivational interviewing. It was mentioned that these skills help the students develop good rapport with patients, understand their social context and thereby communicate effectively to solve even a complex patient or family encounters. In this respect, the communication skills are core part of biopsychosocial approach (psychological and social factors) which prioritize patient centered care.

- The ethics and professionalism domain of AETCOM includes patient autonomy, non-maleficence, beneficence and justice. To acquire this, the students are trained on obtaining informed consent, securing patient privacy, dealing with conflicts and foster equity in care. By inculcating all three factors, the biopsychosocial approach would tailor the students towards ethical domain. Therefore, the students learn how to navigate certain situations requiring ethical principles and professionalism to reduce the incidences of burnouts, medical errors.

Therefore, Competency-based medical curriculum has been designed to address the biopsychosocial approach in healthcare. Competency-based medical education (CBME) focuses on outcomes and emphasizes the importance of integrating knowledge, skills, and attitudes across different domains of learning, including the biopsychosocial approach.

To ensure that the biopsychosocial approach is addressed in a CBME, the curriculum has included the following: <sup>(71)</sup>

**1. Foundational Knowledge:** The curriculum ensures that learners have a fundamental understanding of the biopsychosocial approach, including knowledge about the physical, emotional, cognitive, and social aspects of health and illness. The curriculum integrates the principles, concepts, and theories of the biopsychosocial approach to health and disease. This includes ensuring that learners understand the physical, social, psychological, and cultural aspects of health and illness.

**2. Clinical Skills:** These skills such as communication skills, patient-centered approach, the use of clinical reasoning, and effective team collaboration with patients, families, and

interdisciplinary team members have been included. Also opportunities for learners to use the biopsychosocial approach within clinical practice have been suggested and includes changing the way clinical cases are presented, discussed, and analyzed to reflect the biopsychosocial perspective. Therefore, reframing clinical experiences focused to create skill-building activities that allow learners to practice communication and patient-centered clinical skills, including empathetic listening, discussing social determinants of health, and effectively collaborating with interdisciplinary teams.

**3. Attitudes and Values:** These emphasize respect, compassion, empathy, cultural humility, and the importance of an ongoing, collaborative therapeutic relationship between the healthcare provider and the patient. Therefore, the CBME Includes activities that promote cultural humility among learners, emphasizing the importance of addressing health disparities and working with patients from different cultural and socioeconomic backgrounds.

**4. Evaluation and Assessment:** The curriculum includes assessment strategies that can identify learners' competencies in the biopsychosocial approach, including objective structured clinical examination (OSCE), simulation, and direct observations of clinical practice. Also, it encourages to develop robust evaluation methods that can assess learners' knowledge, skills, and competencies related to the biopsychosocial approach and opportunities for feedback and reflection, enabling learners to identify areas of strength and areas for improvement.

Therefore, incorporating the biopsychosocial approach in medical curriculum requires a combination of didactic, experiential, and reflective activities. This approach can help learners understand the importance of addressing the physical, social, and psychological aspects of healthcare, leading to better patient outcomes and improved population health.

## **XI. Competencies related to biopsychosocial approach in CBME:**

The competencies related to the biopsychosocial approach that incorporated into a Competency based medical curriculum include:

1. **Communication Skills:** Ability to communicate effectively with patients and their families, and to listen actively with empathy, respect, and cultural humility. Also, to be able to discuss complex medical conditions and treatments in a language that patients and family members can understand.

2. **Patient-Centered Care:** Ability to provide care that is tailored to the patient's unique situation, values, and goals in partnership with patients and their families. This includes the ability to address patients' social determinants of health, mental health needs, and cultural preferences.

3. **Clinical Reasoning:** Ability to use a patient-centered approach, incorporating the biopsychosocial perspective, to develop diagnostic and treatment plans that reflect an understanding of the multiple clinical and psychosocial factors that influence health.

4. **Interdisciplinary Collaboration:** Ability to work collaboratively with interdisciplinary teams, including clinicians, social workers, and other non-medical professionals, to address the complex medical needs of patients.

5. **Professionalism:** Ability to recognize and mitigate personal biases, respect and maintain patient confidentiality, and maintain professional boundaries in the therapeutic relationship.

6. **Lifelong Learning:** Ability to recognize the impact of social, cultural, and political factors on health and health disparities, and the capacity to access and critically evaluate the latest evidence-based information in healthcare.

## **XII. Teaching learning methods to incorporate biopsychosocial approach in CBME**

There are various teaching and learning methods that can be utilized to incorporate the biopsychosocial approach in Competency-Based Medical Education (CBME). Some of these methods include:

1. **Small-group discussions:** SGD Engages learners in small group sessions to discuss the biopsychosocial approach to healthcare. Use clinical cases and scenarios to illustrate the practical application of the biopsychosocial approach in clinical practice.

2. **Simulation-based learning:** Employing simulation-based learning scenarios, including standardized patients, virtual patient cases, and simulations, enhances clinical skills related to the biopsychosocial approach. Such simulations should allow learners to practice communication, collaboration, and diagnostic reasoning that considers the varying social and psychological factors that contribute to illness.

3. **Problem-Based Learning (PBL):** Problem-based learning promotes critical thinking and experience-based learning based on patient care scenarios where learners can practice collaborating with an interdisciplinary team to develop patient-centered diagnostic and treatment plans.

4. **Self-directed learning:** CBME encourages learners to take responsibility for their own learning through self-directed initiatives, including reflection assignments, discussion boards, and case portfolio building.

5. **Web-based modules:** Web-based modules incorporate multimedia, social networks, and other learning technology when instructors want to engage in long-distance learning. The modules can be used to practice clinical skills related to the biopsychosocial approach and provide self-assessment opportunities.

6. **Collaborative learning activities:** Using collaborative learning activities such as case conferences, journal clubs, and grand rounds incorporate the biopsychosocial approach in healthcare. Lectures and experts are engaged as resources to provide guidance in discussions.

7. Role play:

8. Case based discussions (CBD):

9. Community based learning methods:

10. Cinemeducation:

Hence, a variety of such teaching and learning methods could be utilized to incorporate the biopsychosocial approach in CBME that will ensure the learners to acquire the necessary competencies and to provide holistic, patient-centered care.

### **XIII. Assessment methods to assess biopsychosocial aspects in medical education**

Assessing the biopsychosocial aspects of medical education requires a comprehensive approach that considers the interplay between biological, psychological, and social factors that impact health. Some of the assessment methods that can be used to evaluate the competency of learners in the biopsychosocial approach include:

1. **Standardized Patient Scenarios:** Using standardized patient scenarios to assess learners' ability to identify the psychological, social, and cultural determinants of health, communication strategies that reflect empathy and respect, and patient-centeredness in clinical care.
2. **OSCEs:** Objective Structured Clinical Examinations (OSCEs) can be used to assess learners' ability to collect a comprehensive clinical history, communication with patients, identify psychosocial factors, and formulate diagnostic and management plans based on the biopsychosocial approach.
3. **Feedback and Reflection:** practices of feedback and reflection help learners better understand their own learning and competency development. This can include self-assessment, peer review, and faculty review, and it enhances personalized feedback and learning.
4. **Case-Based Assessments:** The case-based assessments evaluate learners' understanding of the complex, interaction between biological, psychological, social, and cultural factors that influence health and illness. This additionally assesses communication skills and teamwork approach in managing such cases.
5. **Formative and Summative Assessments:** Both formative and summative assessments used to evaluate learners' progress as they work towards achieving desired learning outcomes related to the biopsychosocial approach.

**6. Logbook or Portfolio Assessment:** Logbook or portfolio assessments keep track on the learners' performance over time, focusing on areas where they may require further training and areas of strength.

A holistic and comprehensive assessment approach should evaluate learners on their ability to provide patient-centered care that accounts for biological, psychological, and social factors. By using a variety of assessment methods as described above, instructors can identify areas where learners need further development and provide feedback that reinforces the incorporation of biopsychosocial perspectives into medical care.

#### **XIV. Assessment tool or questionnaire to assess the biopsychosocial skills**

**1. Patient Assessment of Chronic Illness Care (PACIC) Scale** <sup>(72)</sup>: The PACIC is a tool that measures the extent to which clinicians provide patient-centered care. It assesses the clinician's skills in engaging patients to identify and prioritizes personal goals in care, collaborative goal setting, and structured follow-up care.

**2. Comprehensive Psychopathological Rating Scale (CPRS)** <sup>(73)</sup>: The CPRS is a tool that evaluates the clinician's knowledge and expertise in psychiatric diagnosis and treatment. It assesses the clinician's ability to identify and treat psychological and mood disorders.

**3. Physician Empathy and Patient Enablement (PEN) Scale** <sup>(74)</sup>: The PEN scale evaluates the clinician's ability to develop a relationship of trust and open communication with patients. The scale assesses the clinician's communication skills, empathy, and patient engagement.

The above are few rating scales to assess various aspects of BPS skills. Therefore, different assessment tools and questionnaires are available to assess the biopsychosocial skills of health professionals. The choice of a particular tool or questionnaire will depend on the specific skills or attitudes to be assessed and the context of the assessment.

## **XV. Merits and demerits of Biopsychosocial approach:**

### **Merits:**

- BPS model provides guidance for the application of medical knowledge based on patient's needs
- Improved satisfaction of patient, better adherence to treatment and follow up, less tendency towards malpractices
- Reduced health risk behavior
- Reduction of multiple hospital visits and stay in hospital.
- Increased efficiency of care evidenced by reduction of unnecessary drugs or prescriptions
- Development of appropriate prevention and intervention techniques
- Enhancement of communication between patients and doctors or students and faculty
- Application of psychological support for terminally ill patients and stressed students or faculty

**Demerits and challenges:** Despite of merits, BPS approach has few of following demerits also;

- Time consuming
- Expensive to apply
- Complexity of BPS approach and masking the biomedical approach.
- Due to its holistic nature, it is considered as luxury and difficult to establish in resource poor settings



- Insufficient training opportunities or financial resources available to support the multidisciplinary teams
- Students are receiving very less content of BPS approach during their course when compared to biomedical oriented curriculum

#### **XVI. Barriers for the implementation of BPS model:**

In spite of many advantages, the BPS model has not been practiced in a significant level during the medical programme. Some of the barriers are found on research as

- Feeling of uncertainty arises while addressing the model
- Inadequate reimbursements for the BPS methods
- Lack of expertise in behavioral / mind -body approaches
- Lack of research and evidences for BPS methods
- Reluctance of doctors or students to examine the role BPS factors in their own health
- Lack of patient's or student's willingness to address the BPS factors.
- Lack of support from peers

#### **XVII. Variations and value additions to basic Biopsychosocial approach:**

With exponential development of technology and increased awareness of importance of inclusion of arts and literature to care, and spiritual context, the classical biopsychosocial approach has been enriched with holistic value additions such as;

##### **1. Biopsychosocial tech model/ biopsychosocial digital model:<sup>(75)</sup>**

With the exponential advancement of digitalization and profound advantages, the health care providers, policymakers, and researchers have been expected to embrace digital health solutions for day to day practices. This is perceived as expanded access, reduced inefficiencies, costs, enhanced self- management and personalized health care services like

mobile health information technology, wearable devices, telehealth, telemedicine and personalized medicine. Not only that, this is more of neutral and extended form for the evaluation of potential effects and interactions of digital health technologies.

For example, portable biosensors used to obtain biological data to support access to population especially in low socioeconomic and remote geographical locations. Also, integration of self-tracking of patients' personal medical records has got greater advantages like greater patient satisfaction, delivering psychological behavior change interventions and better-quality care by patients' social media inputs. Therefore, in view of greater advantages, the government of India has launched a novel e-care initiative called "Dhanvantri module" for patient care. Telemedicine unit in the HPI is playing a crucial part in providing significant health services especially for those patients who have accessibility issues and electronic health record systems for tracking patient information. Training of Health care professionals becomes critical for them to understand and implement digital health services effectively. Educators need to design the curriculum, with innovative teaching learning sessions and assessments.

The government of India has implemented MOOC courses through SWAYAM portal, which is providing technology courses at free of cost and asynchronous mode as a mark of professional development. Not only restricted to that, digital approach also motivates more collaborative research projects both in inter-disciplinary and cross disciplinary by having of resources and funding initiatives. Therefore, National Medical Commission of India is encouraging the faculty to get trained in digital technology through Basic Course Medical Education Technology workshops, online webinars and the students, by incorporation of digital literacy in their curriculum even through social media and educational apps, Learning Management systems and simulation-based teaching and learning, M learning. The virtual Reality had been introduced to make the learning and assessment more valid and critical like virtual dissection tables. Hence such Biopsychosocial digital approach has been utilized to make the students' and faculty's teaching learning and assessment methods more authentic through near real-world experiences.

## **Biopsychosocial spiritual model:<sup>(76)</sup>**

In recent years, as there is a growing awareness that the spiritual well-being has a strong association with the less depression, the biopsychosocial model has been expanded to incorporate spirituality within it as an extension, termed “biopsychosocial spiritual model”. Spirituality is defined as an individual’s relationship with the transcendent. This is not only restricted to organized religion, but many forms for increased quality of life. So, the health Professions educator has to foster the understanding of the students on their own spirituality and strategies to nurture it as a part of their professional growth, promotion of their well-being as a physician. Studies have evidenced that residents developed more humility and forgiveness, lowered burnout, increased job satisfaction following adaptation of spiritual attitudes. Applying this model in patient encounters can help to address patient’s spiritual and cultural beliefs such as religious practices and how it affects their health and wellness. This model also favors connections with meaningful communities of shared values.

For example, in certain countries like Malaysia, the Muslim students are given exemption in their official hours for their prayers, therefore not only respecting their cultural beliefs but also, the principles of ethics. It is noticeable that the current CBME also promotes training of students on community-based practices, the biopsychosocial spiritual model will guide them to understand the beliefs, values of community of people being served through teaching about relevant theories, frameworks, and research supporting practices. This learner centered curriculum mandates incorporation of self-care activities and discussions to promote students’ own well-being and resilience. Therefore, HPI are encouraged to offer Yoga, Music therapy and mentoring of students through student mentorship programme and student wellness clinics. Moreover, when a health care provider approaches terminally ill patients, she or he can invite a spiritual guide acceptable to the terminally ill patients to support their beliefs and spiritual needs during the very end of their lives.

## **2. Bio-semiotics model:<sup>(77)</sup>**

Biosemitotics is an interdisciplinary field which that studies the communications and meaning making in patient and student encounters both verbally and non-verbally through

signs, symbols and codes. This explores how biological systems ranging from micro to macro level interact with the environment and other livings. It, as an inherently integrated inter-disciplinary model bridges biology, linguistics, philosophy and cognition.

**XVIII. Applications of biopsychosocial-digital model, biopsychosocial spiritual model, Bio-semiotics model in the medical curriculum:**

S.No	Biopsychosocial- digital model <sup>(75)</sup>	Biopsychosocial- spiritual model <sup>(76)</sup>	Bio semiotics model <sup>(77)</sup>
1	<p><b>Electronic Health Records (EHR):</b></p> <ul style="list-style-type: none"> <li>- This can be utilized to track the medical, social history and psychological therapies of an individual.</li> <li>-this facilitates better communication between health professionals, patient and care givers.</li> </ul>	<p><b>Comprehensive patient care:</b></p> <ul style="list-style-type: none"> <li>-Learners can incorporate this model in their clinical encounters by considering the patients’ physical symptoms, mental well-being, social support and spiritual beliefs when formulating a diagnosis and treatment</li> </ul>	<p><b>Understanding of patient’s / student’s communication:</b></p> <ul style="list-style-type: none"> <li>-it includes both verbal and non-verbal communication and also use of symptoms and signs between either doctor and patient or teacher and student, student and student.</li> </ul>
2	<p><b>Telemedicine:</b></p> <ul style="list-style-type: none"> <li>- This can be utilized when the patient is less accessible to care</li> <li>-This includes like virtual psychological therapy, video communication with</li> </ul>	<p><b>Communication and empathy:</b></p> <ul style="list-style-type: none"> <li>-By applying this BPSS aspects of a patient’s health, the learner can improve communication. Also, the learner can better empathize with their patients, establish</li> </ul>	<p><b>Enhancing learning through multimodal communication:</b></p> <ul style="list-style-type: none"> <li>-educator can include visual aids like images, videos, diagrams as well as tactile and kinesthetics activities.</li> </ul>

	<p>social workers, motivational interviewing,</p> <p>- This approach helps more to develop cultural competency for the students, so that they can understand the impact of cultural, social economic factors, to recognize and address the disparities and inequalities affecting vulnerable populations.</p>	<p>trust and so, provide more individualized care.</p> <p>- Also, the learner could acknowledge and respect the diverse backgrounds and beliefs of patient; therefore, potential misunderstandings and conflicts could be avoided.</p>	<p>- in patient encounters, by using visual aids, Health care providers can help them to understand their health issues, treatments plans</p>
3	<p><b>Patient empowerment:</b></p> <p>- Patient could be empowered to control or monitor their health by providing them with certain tools like apps, and other resources to handle their biopsychosocial needs.</p> <p>- therefore, they can self-educate on self-care, access to self- help groups, and digital platforms to get connected to other</p>	<p><b>Personal and Professional development:</b></p> <p>-taking care of their own BPSS aspects would help them to navigate the challenges of medical education and maintain a healthy work-life balance.</p>	<p><b>Personalized care:</b></p> <p>-through understanding and valuing each patient’s unique make up and experiences, the treatment plans could be personalized</p> <p>- through communication and meaning making, the Biosemiotics approach provides more valuable, meaningful insights</p>

	patients or health professionals		
4	<p><b>Data analytics:</b></p> <ul style="list-style-type: none"> <li>- It helps to analyze the patterns or trends inpatient outcome in relation to BPS approach</li> <li>- It provides a guide for the health care professional to identify areas of improvement, lacunae in the progress and so, guide to develop further targeted interventions further</li> </ul>	<p><b>Mental health support:</b></p> <ul style="list-style-type: none"> <li>-medical students often encounter patients struggling with mental anxiety and depression. Identifying BPSS aspects would ensure their support beyond physical symptoms.</li> </ul>	
5	<p><b>Collaborative care:</b></p> <ul style="list-style-type: none"> <li>- BPSD model make it easier various health care and social professional to collaborate effectively to provide holistic way whether within the same or different geographical locations.</li> </ul>		
6	<p><b>In CBME:</b></p> <ul style="list-style-type: none"> <li>- The family adaption programme could be well</li> </ul>	<p><b>In CBME:</b></p> <ul style="list-style-type: none"> <li>-The yoga, music therapy in CBME could be well</li> </ul>	<p><b>In CBME:</b></p> <ul style="list-style-type: none"> <li>-the AETCOM module in CBME could be well</li> </ul>

	fitting into this BPSD model for the longitudinal method of patient approach.	documented BPSS approach.	fitting into this Biosemiotics model.
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**XIX. Conclusion and recommendation:**

In conclusion, the classical biopsychosocial approach is increasingly important in medical curriculum in India, reflecting a shift towards a more patient-centered approach to healthcare delivery with the focus on human functioning sciences. The inclusion of the biopsychosocial approach and its value additions in medical curriculum in India provides medical students with the knowledge, skills, and attitudes to provide comprehensive care to patients through AETCOM module of CBME, disability competency and soft skills training, thus producing physicians that are capable of delivering holistic, high-quality and patient-or student-centered healthcare. It would be recommended that efficient training methods for the faculty and implementation for students would definitely guide and support the medical students to realize the importance and relevance of BPS model and its variants, therefore to practice as a physician of first contact.

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