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INTERNATIONAL PHYSIOLOGY

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Contents

Editorial

- Yoga a Stressbuster During COVID-19 Times- Editor's View** 45
Amit Kant Singh, Reena Rani Verma

Original Articles

- Can Age at Menarche be Associated with Premenstrual Psychological Symptoms?** 47
Ahria Valavoor Fathima, Aswini Dutt R
- Learning Through Reflection: Exploring Covid-19 Pandemic Experiences of Phase 1 Undergraduate Medical Students** 51
Fariza Jamil, Bharti Bhandari, Deepti Chopra

Review Article

- Role of the Librarian in Today's Health Care Setting - The Clinical Medical Librarian** 57
Prema Saldanha¹, Padmini Thalanjeri²
- Guidelines for Authors** 61

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Yoga a Stressbuster During COVID-19 Times-Editor's View

Amit Kant Singh, Reena Rani Verma

During COVID-19 pandemic we all are going through stress. Stress is defined as "the inability to cope with a real or imagined threat to ones mental, physical, emotional and spiritual well-being causing physiological changes and adaptations. Unfortunately, stress that is a universal problem nowadays has a detrimental effect on mental, physical and psychological health of individuals. The pandemic leads to lifestyle disorders thus lifestyle changes are required to be made by us and yoga is the best life style ever designed.

Term "Yoga" is derived from Sanskrit word "Yuj" meaning "to unite" i.e. union of mind, body and spirit. Yogic lifestyle and practices help in developing positive health that enable to tolerate stress in better way. This yogic health insurance is achieved by inculcation of yogic practices in our daily routine. Yogic practices include the physiologic postures (asanas), controlled breathing (pranayama) and meditation (Dhyana).

It re-orientes the nervous system, has promotive, preventive and curative value and is a safe, non-pharmacological intervention that helps to reduce drug dosage and improve quality of life in psychosomatic and stress related disorders, diabetes mellitus, hypertension, bronchial asthma, irritable bowel syndrome, epilepsy, backache and functional disorders also it reduces or eliminates drug dosage/dependence in these conditions.

Physiology of Yoga

Various functions of our body are controlled by autonomic nervous system – parasympathetic and sympathetic. Stress induces autonomic imbalance by causing elevated sympathetic activity and decrement in the parasympathetic activity with

reduced activity of GABA system which is primary inhibitory neuro-transmitter thus increasing allostatic load. Yoga cause vagal stimulation leading to increase in parasympathetic activity that results in decrease in allostatic load.

Physiological Benefits

Yoga improves overall wellbeing by improving posture, toning up the muscles, improving sleep quality, enhancing immunity and pain tolerance, normalises weight, stabilizes autonomic nervous system, increases cardio-respiratory efficiency, skeletal flexibility also it causes improvement in endurance and energy levels. It causes decrease in blood pressure along with heart rate and respiratory rate. The electromyograph activity also normalises with the improvement of GIT and endocrine functions.

Biochemical Effects

There is improvement of biochemical parameters indicating an anti-stress and anti-oxidant effect that helps in delaying or prevention of degenerative changes.

Conclusion

The ancient art and science of yoga has infinite possibilities of solutions for health-related issues faced by today's world but it's not a miracle pill. It has holistic preview that need dedication towards practicing it as a way of life to regain natural health and universal happiness.

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Can Age at Menarche be Associated with Premenstrual Psychological Symptoms?

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Abstract

Introduction: Premenstrual syndrome is very common in women of the reproductive age group and it significantly impairs their routine activities. In addition, it has been noticed that in recent years there is an early development of puberty and age at menarche is declining in children. Thus, we planned to conduct this study to assess the prevalence of premenstrual psychological symptoms and to determine its association with age at menarche in young females. *Materials and Methods:* A cross-sectional study was conducted after the approval of the Institutional ethics committee. One hundred and fifty health science students aged between 18 - 25 years with a normal menstrual cycle duration of 28+/- 7 days were selected as study groups by pretested and validated questionnaire on premenstrual symptoms. Statistical analysis was done using SPSS for Windows, IBM SPSS Statistics 23 version. *Results and Conclusions:* The mean age of menarche of the study participants was 13 years. We found 91% had Premenstrual syndrome (PMS) among that 74 % reported at least one psychological symptom. The most common symptoms experienced by them were altered sleep patterns (48%) followed by irritability (45%), mood swings (37%) and depression (35%). We also found that the number of premenstrual psychological symptoms had a significant negative correlation with age at menarche. The findings of this study highlight the high prevalence of Premenstrual syndrome (PMS) and the effect of early onset of menarche on psychological symptoms during the menstrual cycle. This study also emphasizes the importance of maintaining a healthy lifestyle, average body weight and to incorporate adequate physical activities in childhood.

Keywords: Menstrual cycle; Menarche; Premenstrual syndrome; Psychological symptoms.

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Introduction

Menstruation is a physiological process that begins during adolescence (puberty) and persists till menopause. The onset of the menstrual cycle is called menarche which results from the activation of complex neuro-endocrine regulatory mechanisms due to the pulsatile release of gonadotrophic releasing hormone from the pituitary gland. It usually begins from the 8th

year of life and usually culminating in the onset of menstruation between 11-16 years of age (average - 13 years). The menstrual cycle is very essential for the wellbeing of the woman. Hormonal changes occurring during the menstrual cycle affect the reproductive system and various physiological and biochemical changes. It involves cyclical changes in hypothalamo-pituitary-ovarian-uterine axis.¹⁻³ Any variations in this axis may lead to irregular cycles, infertility or premenstrual syndrome (PMS).

Premenstrual Syndrome is described as a cluster of physical, cognitive, affective and behavioral symptoms that occur cyclically in relation to the luteal stage of the menstrual cycle and subside quickly or within a few days of the onset of menstruation. The severe form of premenstrual syndrome is called Premenstrual Dysphoric Disorder.^{4,6} Numerous broad spectrum symptoms are attributed to the PMS which includes physical (lower abdominal pain, painful or swollen breasts, headache, and backache), behavioral (altered appetite, oily skin, acne, weight gain) and psychological symptoms (depression, anxiety, mood swings, altered sleep, crying and irritability). Women experience any one or more combination of the above-mentioned symptoms.

Consistently higher levels of progesterone were found in the luteal phase of the menstrual cycle among women who experienced less aggressive behavior and fatigue than those with high aggression or irritability and fatigue.⁷ Significantly higher progesterone levels were observed during the luteal phase in the PMS group compared to the non-PMS group.⁸ Progesterone was found to lower the noradrenaline levels in medulla, pons, midbrain, hypothalamus, thalamus and pituitary gland, thus leading to depression.⁹

Blum I et al. studied serum estrogen levels in PMS and non-PMS groups and found that estrogen levels were higher in the PMS group in the follicular phase and lower in the luteal phase of the menstrual cycle when compared with the non-PMS group.⁸ Estrogen determines concentration, availability and functioning of serotonin by enhancing the synthesis of serotonin, preventing serotonin breakdown and enhancing the action by increasing serotonin receptors or binding sites. The decrease in estrogen levels has been associated with a decrease in serotonin levels and has been linked to mood disturbances.¹⁰

Premenstrual syndrome affects the daily activities of an adolescent girl and women. A study carried out on medical students of the sample size of 250 reported that about 48% had limited concentration in class, 46% missed the class, 43% were not stepping out of the house and 41% reported that they were unable to perform daily activities.¹¹ It adversely affects the quality of life and living of women. Premenstrual syndrome is the prime reason for women to miss class, college or work. Very few studies regarding the association of psychological symptoms and age at menarche were found in the literature. So we decided to conduct this study.

Objectives

The prevalence of PMS and psychological symptoms like irritability, anxiety, mood swings, altered sleep patterns and depression.

Association of number of psychological premenstrual symptoms with age at menarche.

Materials and methods

This cross-sectional study was conducted in the Department of Physiology, Tertiary Care Medical College setup, Karnataka, India. Approval of the Institutional ethics committee was taken before conducting the study. One hundred and fifty health science students aged between 18 - 25 years with a normal menstrual cycle duration of 28+/- 7 days were selected as study groups by pretested and validated questionnaire on premenstrual symptoms by convenient sampling method. The questionnaire was developed in consultation with experts and validated appropriately. The details and purpose of the study were discussed with the subjects. The study protocol was explained and written informed consent was taken before enrolment. Premenstrual symptoms were assessed for three consecutive cycles after giving the questionnaire. Subjects were reminded and encouraged to note the premenstrual symptoms during the study period by message or in person. The questionnaire was collected and their responses were analyzed. Subjects having excessive menstrual flow or irregular cycle, on oral contraceptive pills, endocrine or gynecological abnormalities, pregnant ladies, chronic diseases like diabetes, hypertension and on any other medication like steroids were excluded from the study. Anthropometric parameters like height and weight were recorded. A general physical examination including vital signs and complete systemic examinations was done. A detailed history including physical activity, diet, family, personal and drug history was taken.

The data of this study were tabulated in an excel sheet. Statistical analysis was done using SPSS for Windows, IBM SPSS Statistics 23 version. The analysis was done using Pearson's correlation. $P < 0.05$ was considered statistically significant.

Results

The mean age of menarche in our study group

was 13 years. We studied the prevalence of PMS and psychological symptoms like irritability, anxiety, mood swings, altered sleep patterns and depression. Among the study participants having PMS(91%), 74% had psychological symptoms whereas, 26% of participants did not report any psychological symptoms (Fig. 1).

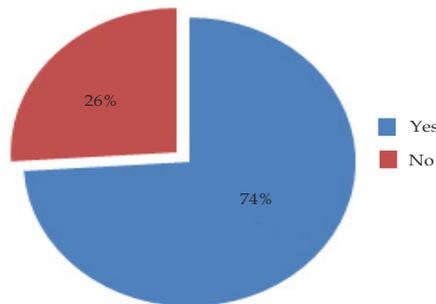


Fig. 1: Incidence of Psychological Premenstrual Symptoms.

Among the psychological symptoms, participants faced higher frequency of altered sleep patterns (48%) followed by irritability (45%), mood swings (37%), depression (35%) and anxiety (9%) (Fig. 2). The number of premenstrual psychological symptoms had significant negative correlation ($p < 0.05$) with age at menarche i.e. earlier the age at menarche, more the number of symptoms.

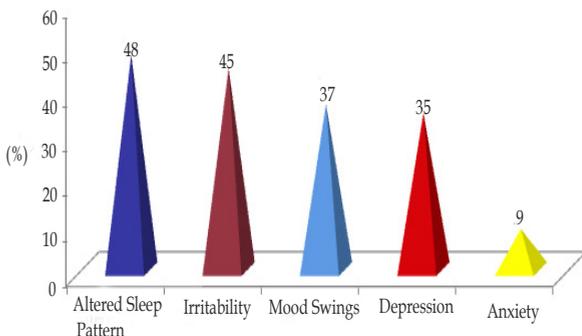


Fig. 2: Incidence of Different Psychological Premenstrual Symptoms.

Discussion

On account of the high prevalence of premenstrual symptoms, women in their childbearing age experience various symptoms that impair their daily routine activities and adversely affect their general wellbeing. This study was planned to assess the prevalence of premenstrual psychological symptoms and its correlation with the onset of menarche.

In our study, we found that the prevalence

of PMS was 91.3% and among them, 74% of participants experienced psychological symptoms. One of the studies carried out on 300 Iranian adolescent students reported that 98.2% had at least one mild to severe premenstrual symptom which is in consistent with our study.¹² A study carried by Tabassum S et al.¹³ in Peshawar in 2005 on 250 college girls reported that 53% of study participants were diagnosed to have PMS. There are large variations in incidence rates of PMS in various studies which may be because of differences in diagnostic criteria and the factors affecting PMS including body weight, stress, culture, ethnicity, health, and family status.

In our study, we found a significant negative correlation with the onset of menarche and psychological symptoms. Study participants who attained early or late menarche encountered more number of symptoms when compared to those who attained at the appropriate age. During puberty, girls are exposed to higher levels of estrogen and there is a constant flux of estrogen and progesterone throughout the reproductive years which results in modification of the neurotransmitter systems altering its sensitivity which leads to the development of PMS.¹⁴

The energetics theory suggests that energy availability (nutritional intake) during childhood influences the timing of menarche.¹⁵ The psychosocial acceleration theory states that the experience of high levels of emotional stress in and around a girl’s family leads to earlier menarche.¹⁶ Khadgawat R et al.¹⁷ documented the early onset of menarche in overweight and obese girls. A decrease in average menarcheal age is registered in literature.¹⁸ According to the above-mentioned theories and studies; the standard of living in the reproductive age group is highly dependent on the early life factors of girls including her body weight, lifestyle, socioeconomic status and exposure to stressors. Relatively smaller sample size, nutritional status, body weight and stressors at the time of age at menarche are the confounding factors that were not assessed in this study. A prospective study including children with a larger sample size and considering early life factors form the future scope of the study.

Conclusion

A high prevalence of PMS was noted and psychological premenstrual symptoms were significantly correlated with the age at menarche.

There are certain factors that affect the early onset of menarche and PMS. Quality of life of childbearing age can be improved by modifying the factors affecting the onset of puberty and PMS. Thus, this study emphasizes the importance of maintaining a healthy lifestyle, average body weight and incorporating adequate physical activities in childhood through adolescence, menopausal and postmenopausal age.

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Learning Through Reflection: Exploring Covid-19 Pandemic Experiences of Phase 1 Undergraduate Medical Students

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Abstract

Reflective writing gives an opportunity to think deeply about something the person has learned or an experience he/she had. The importance of reflective writing in medical education is immense. The Competency Based Medical Education (CBME) curriculum by the Medical Council of India (MCI)/ National Medical Commission (NMC) recommends reflective writing as a means of learning, especially the affective domain. Writing reflections is a process of learning through experience, the experience may be any event like a seminar, a meeting, a disaster, or a pandemic. The outbreak of covid-19 pandemic forced the Indian government to impose nation wide lockdown. The medical students are going through a difficult phase due to pandemic per se and due to the surrounding uncertainties of re-opening of the medical institutions, resumption of onsite teaching activities and examinations. As a part of their learning, the students were asked to share their experience by writing reflection on the ongoing pandemic. The phase 1 undergraduate medical students reflected on COVID-19 pandemic, using the three steps model by Rofle, 2001 the three steps are- what happened, so what and what next. The current article is an attempt to summarise their reflections.

Keywords: Reflective writing; Reflections; COVID-19; CBME curriculum; Pandemic.

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Introduction

The newer Competency Based Medical Education (CBME) curriculum focusses on reflective writing as a means of learning and has recommended its use for formative assessment of students.¹ Reflective writing is defined as a practice of learning from experience and engaging in conversations about practice to develop personal judgment. It can be said that reflecting can act as a stimulus for further development or paves a way in which to perform reflective practice.² It has three components: Experiences that happen to a person, reflective process that enables a person to learn from their experience and action resulting

from the new perspective taken as a result of the reflection.³ It can be said that reflective writing is more personal than other kinds of academic writing. With the unprecedented situation of the Corona virus outbreak, the foundations of the ecosystem of educational institutions have been impacted significantly, leading to highly uncertain circumstances regarding the implications for professional education especially medical education. One of the most crucial changes introduced has been the cancellation of in-person classes and their replacement by online lectures. The theory classes have been replaced easily; but the loss of collaborative experiences in demonstration classes and practical classes is one of the things to

Table 1: Steps of Reflective Writing as Per Rolfe’s Model.

S.N.	Sub-heading of reflection	Event	To do
1.	What happened?	The narrative	Description of what happened. Set the scene and summarize the action.
2.	So what?	The learning	Analysis of the event. Ask yourself what the experience and situation means
3.	What next?	The change	Proposed action after the event.

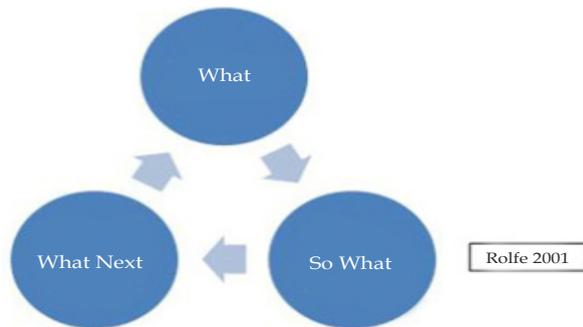


Fig. 1: Rolfe’s Model of Reflection.

worry about. The associated psychological turmoil cannot be ignored. In this article, we have tried to summarize some of the reflections penned by phase 1 MBBS students regarding this dreaded pandemic.

Methodology

To encourage reflective writing among 1st year MBBS students and contemplate on the current situation, they were asked to reflect on the COVID-19 pandemic. The reflections were collected through Google forms. The link for reflective writing was shared through whatsapp and e-mails. Although, the students are accustomed to writing reflections, but to refresh, they were given a brief outline on “how to write reflection” based on Borton’s model.⁴ To encourage the students to express them freely, the responses were kept voluntary and anonymous. The responses were collected online and made available to the authors in a non-identifiable form. After going through the responses, it was decided to make it available for others to read. Hence permission from the Institutional Ethics Committee was obtained for publishing the data. For the qualitative analysis, the responses were reviewed, and thematically analyzed by two of the authors. Final agreement was reached after thorough discussions between the authors. The findings were clustered according to three themes: what happened; so what and what next. Few expressive codes are presented in Italics.

The students were asked to reflect as per Rolfe’s reflection model⁴ (Fig. 1). This is a simple model

that is suitable for novices. The components of the three steps are given in Table 1.

Results and Discussion

There are numerous models of reflective writing. The Gibbs Model of Reflection (1988)⁵, the Schön Model of Reflection (1991)⁶, the Kolb Reflective Cycle (1984)⁷ and the Borton’s model⁸, to name a few.

The Gibbs reflective cycle is the most complicated model that builds on six stages. The six stages are shown in the Fig. 2.

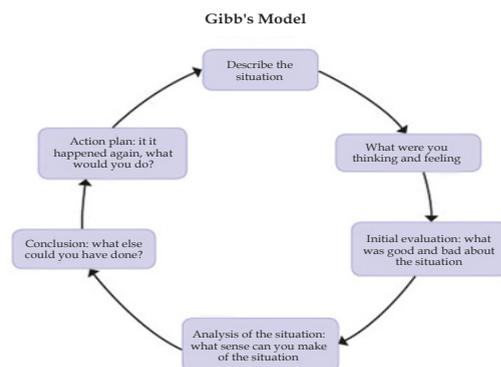


Fig. 2: The Gibbs Model of Reflection (1988).

The Schön Model of Reflection (1991) is a professional model, highly acceptable but not suitable for students. Schön explained reflection-on-action (a cognitive post-mortem post the situation) and reflection-in-action (in the moment puzzlement and surprise).⁶

The Kolb Reflective Cycle Model of reflection consists of points like making a judgement, testing things out, asking how/why etc. It is acceptable for beginners but is believed to be a superficial reflective practice. The Kolb Reflective Cycle (1984) is shown in fig. 3.⁷

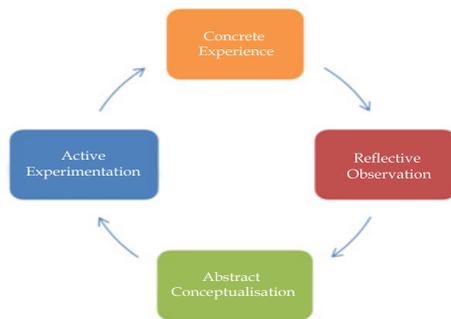


Fig. 3: The Kolb Reflective Cycle.

The Rofle's model has been derived from the Borton's model⁸. The Borton model was proposed in 1970, however it was further modified by Rolfe in 1988 and has been used by professionals as well as students since then. It is believed to be the most successful model for reflection writing.

In the current study, the students were asked to reflect on the situation using Rofle's model. Around 80 students responded to the activity. We have briefly summarised and are presenting the excerpts of some of the reflections presented by the students.

What Happened

The reflections of the students in this article showed that Covid-19 has same yet different face for each and every student. While reflecting on the current scenerio, the students talked about the onset of COVID-19 pandemic, the nationwide lockdown, closure of the medical college, discontinuation of onsite teaching activities and inception of online teaching-learning programme.

"The news of the corona virus outbreak in our country broke in like a fire in the jungle. Every body was tensed and scared."

"Due to covid-19 pandemic, all colleges, malls, theatre, all places where gathering occur get closed, and then the lockdown begins by the government of India, and we have to stay in our homes."

"Due to covid-19 pandemic in India we are unable to attend our regular conventional classes at colleges due to which we were lagging in our syllabus."

"We had to leave our institute because of the corona pandemic in hurry we were not able to

bring all of our books with us and when college will reopen that was also not certain."

"Due to sudden outbreak of COVID-19 Pandemic, our normal classes in college were suspended and students were sent to their homes. Further extension of lockdown interrupted all activities around the nation."

"We were at our college campus when this news of corona first came into light, there was the news of 1st case reported in Kerala. In few days, the Government decided to impose lockdown, all the students were sent to their homes from hostel and the college staff and faculty made sure that each and every student reached home safely they contacted us time to time and kept a check on us."

"The situation looked serious and the entire College was emptied, we all came home. Then eventually everything was under lockdown. It was really shocking to see the increasing number of corona patients. There was panic among people. Doctors have been giving all to safeguard the people.

"Everything was just going fine, we were about to have our terminal 2 exam, and suddenly, a virus named COVID-19, started spreading in India too, as a consequence of which, we were sent back to our homes. I didn't get enough time to judge the situation, didn't know till what time we are being sent to our homes.

"Due to sudden emergency situation we left the college hostel in hurry and couldn't take all the books and study material with us because we didn't knew that we were going for so many days. Productivity and the efficiency has also decrease as we are staying in the same closed environment day and night for so long for the first time."

So What

The students discussed about the actions taken as a result of the situation, they have primarily discussed the positive aspects of lockdown like improved personal hygiene, pursuing their interests and hobbies, preparing themselves for being the future doctors, appreciating the efforts of faculty in delivering online lectures etc. Negative analysis included affected studies, economic recession etc.

"The lockdown has provided individuals time to enhance their personal skills and complete backlogs. Although there has been inconvenience in completing the curriculum, the online classes have proven to be a boom for the students."

“It has taught us the importance of hygiene and inspired us to become dedicated and helpful doctors.”

“I will once be a part of the Doctor Community, so on my part I raised awareness through social media, followed the precautionary measures and encouraged people around me (family members) to do the same. Yet there are people who do not understand the severity of the matter and roam outside for their leisure.

“Our online classes were started, which initially caused trouble, but I think now its working fine. Many people did come out with their talents in this quarantine. I myself, who is interested in sketching and painting, have been able to devote a bit of my time to it, which otherwise I would never have been able to. A lot of such things have changed in my life.”

“A very applaudable step taken by our college faculty to teach us online. It was a very good experience to learn via online classes as we study with more concentration on the app.”

“We are having online lectures by our institute but they are not that efficient as the college lecture and I am facing many difficulties like network problems and lack of books.”

“Despite the pandemic, online classes came as aid and we are trying to gain as much as possible.”

“Undoubtedly our studies has been badly affected by this pandemic.

“As the SARS-CoV-2 virus has spread around the globe, concerns have shifted from supply-side manufacturing issues to decreased business in the services sector. The pandemic caused the largest global recession in history, with more than a third of the global population at the time being placed on lockdown.”

What Next

The students believe that the pandemic has taught them to overcome hurdles, to lead a simple life, to help others in need, to stay positive and hope for the best. It is an anxiety promoting time for all of us but it is in some or the other way affecting each and everyone differently.

“I learnt that, no matter how difficult the times get, we can together overcome it. Online classes can be conducted effectively if necessary. I learnt that we run for the materialistic world, and forget about how life can even be lead with simplicity. “

“This lockdown hasn’t been same for everyone, daily wagers have to go through a lot. On my part, my family has helped poor people around by helping them with food item and ration. I will continue to follow the rules and do the needful in the times of difficulty when my nation needs me”.

“After the pandemic is over, we must not forget the essence of hygiene and socially etiquettes. Be respectful towards the medical practitioners and healthcare workers. Be proactive in covering the education loss incurred during the lockdown.”

“I feel incredibly optimistic about the future, there is an antidote to fear, HOPE that will pull us through these difficult times. By having faith that this virus will pass, listening to the medical professionals and authorities, staying indoors, keeping good hygiene, social distancing, being mindful and supportive for those deeply affected either physically or emotionally, I whole- heartily believe that we will be able to persevere and come out stronger than ever!”

“In the coming days I hope that everything becomes all right so that we can continue our studies like earlier. Because online studies cannot replace classroom studies.”

“I wish everything gets back to normal so that we can continue our studies like earlier. Not good experience. As lockdown period is increasing, interest in every thing including studies is decreasing.”

“After the end of this pandemic, we would be continuing hygienic practices and social distancing to avoid this situation in upcoming times.”

“After current situation is over, professors should resume classroom teaching as soon as possible and giving extra time for practical as we are lagging behind there.”

“Now, I am revising the previously taught topics, and reading what’s being taught in the class. Hoping, everything will be fine soon, number of COVID cases will decrease and health care system of India will be able to combat with the upcoming situation, and for us, college willreopen, so that we have our life back to normal”.

Conclusion

The medical students and we as educators will always have this unusual experience of the pandemic and lockdown etched in our minds,

incorporated throughout our lives and careers. Some students have a positive approach towards the upcoming times while the others are apprehensive of their syllabus lag and the dread of contracting the disease itself. Uncertain times call for stronger measures and the medical educators through out India have been stepping up to take some major changes to encompass the new age learning and the corona virus outbreak is acting as a catalyst in this situation. It is highly probable that the pandemic shifts the inclination of the educators as well as the learners from a conventional classroom learning to the new age digital learning. Apart from the syllabus being covered in the online lectures, we should encourage our students who are the budding healers of tomorrow to be strong and contribute to the society by keeping their family members, friends, neighbors and acquaintances in a positive state of mind; by alleviating their stress and anxiety through counseling.

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Role of the Librarian in Today's Health Care Setting – The Clinical Medical Librarian

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Abstract

In today's health care setting, medical professionals need to update, find evidence and fill the gaps in the existing knowledge with material from the ever-growing body of research literature. Paucity of time and lack of skills required for literature search makes this task difficult. The clinical librarian, medical librarian, clinical information specialist/scientist, and medical information specialist/scientist are terms used for librarians who assist in this task and search literature as a direct service. This could enhance improve care decisions and help in the practice of Evidence Based Medicine.

Keywords: Lifelong learner; Evidence based medicine; Clinical medical librarian.

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Introduction

The Medical Council of India has proposed the Curriculum-based Medical Education (CBME) from 2019. The undergraduate medical education program proposed by MCI is designed to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, such that she or he may function appropriately and effectively as a physician.¹

In order to achieve this, precise goals for the Learner have been formulated. These learner's goals include commitment to continuous improvement of skills and knowledge as a Clinician who is also Lifelong Learner, able to work in a health care Team, and who is committed to achieving Professional excellence.¹

The competencies pertaining to Lifelong Learning include the ability to search (including

through electronic means), and critically reevaluate the medical literature and apply the newly gained knowledge and information in the care of the patient.¹

Medical knowledge grows every day, so that previously accepted facts rapidly become outdated and at times it may seem impossible to follow such explosion of scientific information. The medical professionals need to update, find evidence and fill the gaps in the existing knowledge with material from the ever-growing body of research literature. The term Evidence Based Medicine (EBM) was coined to include the conscientious, explicit, judicious and reasonable use of current best evidence in making decisions about the care of individual patients.²

Modern therapeutic modalities involve teams comprising of members from interprofessional backgrounds. Interprofessional Care (IPC) could be defined as "the provision of comprehensive health

services to patients by multiple caregivers who work collaboratively to deliver quality care within and across healthcare settings".³ Healthcare delivery is a complex process involving stakeholders from different professions. Most developed nations are currently moving towards an interprofessional approach for patient care.

Interprofessional collaboration occurs when two or more professionals work together to achieve common goals and this teamwork is a means for solving a variety of problems and complex issues. The benefits of this type of collaboration allow participants to achieve more together as a team than what they can individually, serve larger groups of people, and grow both on individual and organizational levels. Interprofessional collaboration is currently seen in many areas including clinical practice, education, and research.⁴

To prepare future medical professionals for work in a clinical setting that increasingly features IPC, medical training needs to focus on the importance of teamwork, and the working of healthcare teams. Thus, it is important to understand the unique roles of various health professionals involved in patient care.

What is the role of Librarians in the current Health Care Setting? - The concept of Clinical Medical Librarian.

A typical medical professional is expected to be available round the clock for patient care, and in a country like ours where the doctor patient ratio is often dismal, these professional have scarcely any time to dedicate for literature search. Therefore a great effort is needed to establish the critical link between the huge body of information hidden away in the medical literature and the information needed at the point of care.⁵ Librarians, skilled in identifying appropriate resources and working with multiple complex interfaces, can support the clinicians and help them to practice EBM by understanding the clinical question and providing time and expertise in identifying the best evidence.⁶

It is also believed that evidence-based medical practice generates cost savings due to the delivery of more effective care⁵ by reducing the lengths of stay, number of tests, etc. It can eliminate the need for unnecessary treatment while preventing rampant malpractice litigation.⁷

Clinical Medical Librarian (CML) services [sometimes called just "Clinical Librarian (CL)" services] were originally conceived as a way to integrate health sciences library services and

the literature searching expertise of medical librarians into the patient care setting.^{8,9} Gertrude Lamb established the first CML programme at the University of Missouri- Kansas City School of Medicine in 1971.⁵ The term clinical librarian, medical librarian, clinical information specialist/scientist, and medical information specialist/scientist are all considered synonyms for librarians providing literature searching as a direct service.¹⁰

These 'information professionals' join the multidisciplinary team at ward rounds and in clinical meetings and work in partnership with medical professionals, promoting a questioning and learning culture within the health care team and in the organisation.

A primary goal of these services has been to overcome the time and expertise barriers that clinicians face when they attempt to incorporate the best current evidence from the literature into their patient care decisions. An important secondary goal has been to enhance the educational experience of students and residents during their training.⁸

Searching medical literature helps to optimise patient care. Librarian participation in ward rounds supports evidence-based medicine (EBM) practice in the clinical environment working in tandem with clinicians. The clinical team members should recognise the value added to the clinical expertise by having the librarian present.^{6,9} The CML should be accepted as a member of the clinical health care team as the CML-provided information resources could improve team members' knowledge of the clinical literature, and thus develop the overall quality and value of the CML services.⁸

The clinical librarian service takes the library service to the user and provides responses to questions regarding patient care. Medical professionals may face difficulty in searching the literature systematically when faced with a clinical question, because of time constraints and lack of awareness of the resources available. The clinical librarian fills this gap. By attending ward rounds, journal clubs, clinical and audit meetings, the clinical librarian ensures that these questions are answered using the best available evidence-based resources.^{7,10}

We have noticed that the literature is flooded with numerous substandard and fake articles confounding medical facts. This is especially true with emerging health issues and infections, the COVID-19 pandemic which has shaken the world, is a very good example. Every day, numerous articles are in circulation and the veracity of many

of these sources are questionable. The librarian could help in identifying the authenticity of these resources.

A CML can be most effective by participating in rounds involving patients with more complex medical problems (severe diseases and many differential diagnoses). Understanding of the uniqueness of each patient and complexity of the medical problems along with the clinical setting plays a role.¹¹

Teaching computerized searching and bibliographic skills can make it possible for librarians to expand the existing programmes and enhance the role of the CML by adding a variety of educational experiences to CML services and creating a more worthwhile relationship with the clinical staff.⁵ The librarian can use opportunities during rounds to teach use of controlled vocabulary, keyword searching, resources, and supports critical appraisal of articles.^{6,9} The introduction of very user-friendly search engines and freely accessible databases on the Web has shifted the emphasis of many CML services from facilitating and mediating access to information to educating health care team members about the strategies needed to effectively use these resources on their own.⁸

The Librarian is the chief educator of those who use the library and should make it a centre of self-education. Libraries should play an important part in the process of self-education by the medical student and teach them to make effective use of the library.¹² The librarians can teach search skills either through workshops or through the development of online modules.¹⁰

Although information literacy is an essential skill for both residents and trainees, it has been found that their progress through the educational stages did not increase the sophistication of digital literacy, thus, identifying the need for instruction and training in the area of information science.¹⁰

Besides helping physicians provide quality care to patients, they help could provide information suitable for patients, answer consumer questions, and provide information to the health care industry.¹¹ It has been found that clinical librarianship is however not much developed in India. The recognition of clinical librarian or an evidence-based librarian will have an effect on current hospital practice.⁷

The benefits associated with a CML services are effects on patient care and appear indirect. The scope for the development of CML services

is vast, but will inevitably be limited by financial, organisational and cultural constraints. The challenge for librarians, clinicians, and managers is to demonstrate the value of such services in terms of clinical effectiveness and cost-effectiveness, and, in doing so, to expand the evidence base for this practice.⁹

Considering their usefulness, there are certain factors to be considered while advocating the services of CML including the clinical settings in which the CMLs can work most effectively, situations where CML-medical professional interactions are most helpful, productive, and conducive to better patient outcomes, the changing health care landscape, effective work schedule for the CMLs, optimal ratio of CMLs to medical professionals served, and training or skill sets needed to make CMLs most effective.⁸

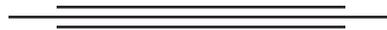
Conclusion

The success of the CML depends on the utilisation of the literature in patient care. They serve as a bridge between the available medical information resources and the medical communality. Their services could serve as an aid to the busy clinical Faculty in day to day treatment and also assist in research.

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Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. *J Oral Pathol Med* 2006; 35: 540-7.

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Article in supplement or special issue

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Corporate (collective) author

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