

# BU PRODIGY

Voice of the Intellect

Volume 2 – 2020

## EDITORIAL PICK

COVID-19 Breakthrough: Impact & Protective Measures for certain Social Class

## FROM THE EDITOR'S DESK

New Thinking: Life Amid COVID-19

THE NEW NORMAL

# TRANQUILITY

BY MAHAM MALIK



## KARACHI CAMPUS

13, National Stadium Road, Karachi  
BUKC ☎ +92 21 992 40002-6  
NCMPR & IPP ☎ +92 21 111 111 028

INSTITUTE OF PROFESSIONAL  
PSYCHOLOGY,

NATIONAL CENTRE FOR  
MARITIME POLICY  
RESEARCH

&

MEDICAL &  
DENTAL COLLEGE



## ISLAMABAD CAMPUS

Shangrilla Road, Sector E-8, Islamabad  
☎ +92 51 111 111 028



## LAHORE CAMPUS

Adjacent to PNS Shifa, DHA, Karachi  
☎ +92 21 353 19491-9

47C, Civic Center, Johar Town, Lahore  
☎ +92 42 99 233408-15

**#socialdistancing**



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RECTOR'S MESSAGE  
VICE ADMIRAL (RETD) KALEEM SHAUKAT HI(M)  
RECTOR BAHRIA UNIVERISTY



We at Bahria University work diligently to become a Knowledge and Creativity driven International University that contributes towards the development of society. BU strives to deliver Quality, Distinction and Leadership in different Academic Fields in an era of National and International transformations witnessed by the Higher Education System.

Getting into the world of knowledge is made possible by investing and producing quality Research in a way that enables promoting Academic Excellence. Challenges faced by Higher Education are not just limited to the responsibility of providing Learning and Research platforms. But also lie in enhancing the intellectual side of those involved in imparting knowledge.

BU Prodigy is a New Magazine of Bahria University for Industrial and Academic segments, highlighting key Research activities and originally created articles on relevant trends and topics. The idea is to enlighten the respectable audience on the Research, Creative and Intellectual side of our valued BU Faculty, Researchers and Innovators.

I invite you to explore this new avenue that showcases creativity driven efforts by the BU Fraternity and familiarize yourself with the BU Community.

**Happy Reading!**

## 2. FROM THE EDITOR'S DESK



"It's nice to do something that feels normal." It's a phrase I'm repeating myself these days.

We can all agree, it's very common in our daily lives. Something that has struck me in the recent times is that I have been searching for the simplest moments of my life before we were hit by the second wave of COVID-19. A weekend trip to the grocery store, a drive in my car, work around my apartment - these everyday chores were barely noticeable and even a few weeks ago, I was distracted by things like social distancing and staying home. Staying at home, battling the challenges associated with pandemic are now the realities of our daily lives. But today, they bring hope and comfort in the midst of my daily new rhythm. I hope that we all can mutually relate to this experience.

What kept us all strong and focused on our individual and collective goals was the motivation and belief in a better future. We felt and intuitively knew that better days would come, and that thought gave us the strength and opportunity to adapt ourselves in line with changes brought by COVID-19. We hope that in 2021, we will slowly begin to return to normal, and that hope has kept us strong in moments disconnection with our loved ones and different levels of anxiety.

In the second edition of "BU Prodigy", we are offering some reflections on Iqbal's Educational Thought, how to deal with stress caused by COVID-19, the importance of Social Support as a whole. We have a piece on Rights Based Approach and Green Cloud Computing. Other noteworthy additions include the Biography of a Book and Anglo-Saxon Literature.

The 'New Normal' may be here, but there is no reason to simply give in. Let's challenge it, the way we can, every way. The 'New Normal' will be a continuation of the path of innovation and modernization that will redefine the way we engage academia, experiential learning and acquiring skills that prepare us to deal with the uncertainties of life and the unpredictability to establish a more stable and prosperous future. We hope BU Prodigy will be an inspiration to just do that. Happy Reading!

For your valuable feedback, write to us at [buprodigy@bahria.edu.pk](mailto:buprodigy@bahria.edu.pk)

**Maham Malik**  
Publications Officer  
Directorate of Marketing BUHO



## COVID-19 BREAKTHROUGH

### Impact and Protective Measures for Certain Social Class

World has been battling epidemic diseases for the last few centuries including Influenza, Ebola, SARS and most recently the COVID-19. COVID-19 is more similar to the Influenza or Spanish flu in its biological nature and spread.

Present pandemic has established itself as one of the deadliest with a figure of hundreds infected and millions of deaths in the last 15 months despite significant advancement in micro biological studies and improvement in overall health facilities in the last two hundred years. Source of the virus is not certain. Whatever might be the source of this virus, it has brought economic calamity and social disorder globally. World community and individual states tried to respond to this pandemic quickly and various measures were taken to contain and mitigate the sufferings of people. The virus control measures are affecting trade and commerce, social norms, relationships and lifestyle. Since, the pandemic is prolonging beyond expectations, questions, such as; "will this pandemic leave scars on the global socio-economic and financial conditions for a long time?" or "will this bring permanent change in the living pattern of people globally?" Though there is no right or wrong answer at this stage as real-time data on the amount of damage the pandemic has inflicted to the world is not available or how the world will be looked upon in the post-pandemic period is uncertain.

Despite the bio-medics being successful in making vaccines to boost the immunity of human bodies against the virus, the level of effectiveness of the measures taken to save humanity is still opaque. But this is apparent from the experience of the last 15 months the pandemic will certainly force us to adapt to the new normal living as it seems it is going to stay longer than we expected.

## 3. EDITOR'S CHOICE



### Direct And Indirect Impacts

Researchers are busy in studying the impacts of the COVID-19 with reference to the demography and occupations. However, researched information on the impacts from the perspective of social class in totality is still insignificant. Some of the researched information spotted while surfing the reputed journals and other publications are being presented below, in brief.

Most of the researchers' found that the senior citizens' segment are seen as the real target of the virus as 60% deaths of 60+ age groups are attributed to COVID-19. Of course, the complications of health issues, in this age group, have been the most obvious reasons of death. Besides, a significant number of health-care workers (HCWs) have been directly affected by the virus transmissions from patients and their occupational stress. 50% of health-care professionals are suffering from acute psychological stress, exhaustion, and post-traumatic stress, caused by the fear of contagion of their family members and the social isolation. In general, survivors of COVID-19 are at risk to develop symptoms, such as post-traumatic stress, burnout and emotional exhaustion.

While researching on the intensity of COVID-19 with reference to its fatality, Research Team of the University of California analyzed, the data generated by the State, of people aged 18–65 to ascertain how many more deaths occurred among working-age adults during the pandemic than the expected without the COVID-19's spread. The research team found that compared with a non-pandemic scenario, deaths were 28% higher for transportation and logistics workers, 11% higher for non-essential workers and 39% higher for food and agriculture workers.

Apart from the direct convicts of the pandemic, children are particularly at risk of developing anxiety. In general, parents observed behavioral and emotional changes in their children during their quarantine. The research involved a sample of 1,143 parents of Italian and Spanish children of age between 3 to 18. Further data collected on a sample of college students at the time of the spread of the epidemic in China showed varying levels of anxiety in young adults depending on various factors, such as living in urban areas, the economic stability of the family, family sizes and cohabitation with extended families.

## Protective Measures

To protect people from the effects of pandemic, the WHO and other International Health Organizations advised various prevention measures which can broadly be categorized mainly in three streams, such as: Lockdown - Nose, Throat and Respiratory Hygiene Care, Social Distancing, Use of Medicated Stuffs and Medical Measures. Accordingly, countries opted for extraordinary measures to contain the pandemic. As a result of such measures and also elements related to the pandemic that affected the population by separating from loved ones, loss of freedom, uncertainty about the advancement of the disease, and the feeling of helplessness.

By the efforts of bio-scientists, vaccines have already been developed and now it is being provided to the prioritized groups of society in many countries. The vaccine instructs the body to make the coronavirus's spike protein priming the immune system to produce neutralizing antibodies that can prevent cells from being infected.

As highlighted above, from various perspectives, researches on COVID-19 are being conducted. However, particularly from socio-economic class's vulnerability perspective no research is in sight so far. Paucity of research in this avenue, in fact, is making the preventive and curative measures less effective. It is of great importance to ascertain that people belonging to which socio-economic class the COVID-19 is making its prey on the basis of certain body/health weakness of people because of their living pattern and lifestyle. If this is understood, prevention and cure will become a bit more practical and up to some extent easier.

## Conclusion

The measures taken proved effective in controlling pandemic all across the globe in varying degrees in different geographical areas. However, these measures bear economic, social, demographic, and environmental costs. A modestly prolonged economic shutdown gave birth to an economic slowdown, financial catastrophe, unemployment, tentative population increase in some parts of the world, and environmental challenges. The international organizations and national institutions have responded with various control measures and facilitative packages for directly or indirectly affected people of the pandemic. Despite these measures, the woes of people, particularly, in developing nations living in South Asia and Africa, have still uncertain economic and social development trajectories for a vast majority of people.

**Dr. Mustaghis ur Rahman**  
Senior Professor  
Department of Management Studies  
(BBS)<sup>1</sup> Bahria University Karachi Campus

## 2. MIND BOX



### CYBERSECURITY FOR GOVERNMENT

#### Do You Worry?

- How vulnerable is your organization to cyberattacks?
- How vulnerable is your network to cyberattacks?
- Is the Federal/ Provincial/ local government doing all that it can to secure its network?
- How secure Federal/ Provincial /local government information is in your system/network?
- Impact of a cyberattack on various government organizations/departments.

#### Best Practices

- Implementing best practices in cybersecurity is not a static, check-the-box compliance exercise but the continuous use of emerging tools/technologies, products and programs to minimize risk level and maximize security.
- The Cybersecurity Framework collectively developed by industry and government offers recommendations for standards and best practices that will help improve cybersecurity for any company. To encourage its use, CRC offers free technical assistance, software and resources to help mitigate cyber risk.
- Risk Assessments are essential to understanding risk. CRC provides both self-assessments, which are

conducted independently via test forms that can be directly downloaded from the website or through CRC cybersecurity on-site evaluations.

Control systems are operated separately from IT systems in many organizations whereas CRC provides independent evaluations of the control systems for organizations.

#### Information Sharing

Information sharing is important because alerts of threats, accidents, and anomalies in the network will reduce the number of victims and reduce the overall effect.

Under the CRC Fortification of Critical Infrastructure Defense Unit (FCIDU), CRC acknowledges the importance of sharing cyber-attacks and incident details, your information is kept safe from the public when shared with CRC.

CRC business development manager is working closely with the Information analysis and sharing Unit (IAU) relevant to the industry. Standards and regulations for the creation of Information Analysis Organizations (IAOs) were created for companies that may be in different industries but share a common interest and

want to communicate with each other.

The CRC provides free content that includes newsletters, vulnerability and patch notifications, emerging threat detection information, and warnings and alerts through the Cyber Awareness centre. CRC shares specialized network activity in the control systems arena which indicates threats.

CRC also offers an Automated Indicator Sharing (AIS) capability, a free, two-way information sharing tool between participants in the government and the private sector that relays signs of unusual network activity indicating threats at machine speed.

CRC's Improved Cybersecurity Service Suite (ICSS) helps protect organizations in the public and private sectors from unauthorized intrusions into the network. CRC shares classified cyber threat indicators with qualified Commercial Service Providers that use the information for customer protections.

CRC offers Cyber Information Sharing for businesses that can collaborate. We exchange information on cyberattacks, incidents and vulnerability in near real-time, and work with partners to better understand threats and improve network security.

## Incident Response

Cyber incidents will occur if adversaries are determined. That's what CRC does. In response to incidents, the CRC cyber response wing works with customers from the public & private sectors and with international partners. CRC will send fly-away teams to work on-site in response to incidents, including those involving industrial control systems, on request from the private sectors.

In its incident arsenal, CRC provides tools and services such as the National Cybersecurity Assessment Services, which includes penetration testing, wireless discovery and detection, web application, inspection, and the scanning of databases including the operating system.

Other incident response services include digital media, and malware analysis, incident source identification, analysis of the extent of the breach, recovery strategy development, and improved defenses. For more information or to request-response services.



Sajjad Shah  
 Team Lead, CRC Lab  
 Bahria Innovation Center  
 Bahria University Islamabad Campus

## ROAD TO REDEMPTION:

### Building Leaders of Tomorrow

I am a firm believer of the principle that a life can change, and systems can be improved if a person is provided with the right skill set, guided and motivated, he or she becomes an integral mover and contributor to not only his/her close surrounding but also the surrounding society.

Keeping a very close eye on the entrepreneurial ecosystem of emerging economies, with favorable economic conditions, more buying power, one of the largest youth populations in the world and access to technology, our startup ecosystem is progressing, but at a very slow pace.

We at Bahria Innovation Center are committed towards building a strong Entrepreneurial Ecosystem for nurturing innovation for Startups and Commercial Research Spinoffs in Pakistan with our network covering almost all major cities and metropolises in Pakistan. Apart from our responsibilities of managing Business innovation and development aspects of various Startups by working with a dedicated team of ecosystem specialists and experts, designing, and creating specialized ICT solutions, providing consultancy, creative marketing and business solutions to SMEs and new venture we have also been working with public and private partners in context of social development, mobilization, and empowerment via entrepreneurship. Our team has been working on various fronts and initiatives to not only guide and mentor our next generation of young leaders to bring forth their innovative ideas to resolve the greatest problems of our times, but also create an entrepreneurial mindset and culture in our leaders of tomorrow, in true essence and spirit.

Our **"Pehchan Program"** is an initiative to promote women entrepreneurship across the board and engage youth participation to practice and preach the concept of an enterprise. Through this program women-led start-ups from the underserved stations across Islamabad/Rawalpindi get a chance to grow beyond the socio-cultural, institutional, technical, and financial barriers. This program aims at creating women entrepreneurs and whilst combating existing socio-cultural barriers for immediate social change for women entrepreneurs, polish their Business skills to effective business management & communication, exposing them to opportunities they do not get otherwise, helping the beneficiaries to set up sustainable businesses in their communities.

One major contributing factor i.e., use and embedment of innovation and technology has made ways for many new small/medium venture founders to rethink their business models and strategies, coming up with new



interactive ways to manage their businesses. Access to new emerging innovation and technologies, has made gateways for many businesses to think out of the box and create more interactive products and services in Tourism, Education, and Health.

We came across a similar example in our joint effort with UNDP and USAID as part of Fata Economic Revitalization program, an initiative to not only combat poverty, illiteracy, unemployment, but also to promote entrepreneurial mindset across several verticals in the remote regions of south Waziristan, north Waziristan and Khyber district. Individuals from diverse backgrounds, cultures and classes were trained, mentored and funded to put their theory to practice by covering their new innovative ideas into sustainable business.

We have seen that talent depletes if not exposed to the right skills and opportunities. Pakistan is a country with immense flair and potential to do wonders, and if mentored and guided with continuous dedication can result in successful stories emerging. We believe change will come if systems are improved when nurtured in the right way, giving way to new leaders, disruptors and change makers.

**Ali Qasim**  
 Innovation Lead  
 Bahria Innovation Center  
 Bahria University Islamabad Campus

## 4. IQBALIAT



**“People who have no hold over their process of thinking are likely to be ruined by liberty of thought. If thought is immature, liberty of thought becomes a method of converting men into animals.”**

### IQBAL'S EDUCATIONAL THOUGHT

It was in the first few decades of the last century when the ingress of Western secular thought in Islamic world was challenged by quite a few scholars of the East. Among the most vigorous ones was Allama Muhammad Iqbal of the subcontinent. Iqbal's dream was the renaissance of the Muslims of India in particular and Muslim ummah in general. His message was in the mode of spirited poetry which not only affected the Muslims of the subcontinent, but also found inroads to the other communities of subcontinent. Today he is cherished as a national poet of both Pakistan as well as India.

The education system of any nation has to be developed on the nation's own philosophical approach. We observe that all Muslim nations are deeply influenced by the western philosophies. It is high time for Muslim educationists to reconsider this current educational model and restructure the foundations of our education system according to the Islamic philosophy of life. For formulating such changes, we can be guided by the philosophy of a Muslim intellectual like Muhammad Iqbal, who is well grounded in both Western and Islamic philosophies, who carries a deep ache for the weak ummah (Muslim nation), and very keenly works for its renaissance. He endeavours to diagnose the flaws responsible for such depleted condition of the Muslims and prescribes cures as well (Ali, 2011); an intellectual, who is very widely accepted and venerated for his wisdom. In Iqbal's philosophy, we have in hand a practical guide for making this restructuring of educational philosophy according to the Islamic perspective. Iqbal clarifies that the progress in science and technology is not dependent on western languages or philosophies (Qureshi, 1979), which is a prevalent misconception; the West did not borrow Arabic language, or Islamic philosophy for their renaissance in the 15th and 16th centuries.

Iqbal's basic focus in education is on the development of individuality, or what he terms as khudi, in each person (Nadvi, 1979). Daud (1998) opines that the definitive educational aim of Iqbal is the development of strong individuals; he considers "individual self as catalyst for civilizational reconstruction". Iqbal (1944) complains that it was the lack of individuality, resulting from the domination of Western nations in the political and scientific arena, coupled with the non-progressive attitude on part of majority of religious scholars, which has resulted in the present inertness of the Muslim community. He stands for a free man with a very distinct individuality, which prepares this man for taking charge as the vicegerent of the Creator and makes him feel responsible for his deeds.

Individuality has at least two very important facets: first, on the Day of Judgement, each person will face the Creator all alone for individual judgement and will have to answer for the deeds done during the earthly episode of life. Second, each individual has to rise to the stature of khalifahood (vicegerency) in this life, bearing Creator's (SWT) Divine Trust (Qur'an, al-Ahzab: 72). A nation with weak self or individuality can never be the standard bearer of Allah (S.W.T.). As such "the development of human individuality is the principal concern of education in Islam.... This personality is the bearer of Divine Trust" (Iqbal). In Iqbal's opinion, this individuality is not an inert entity but a very original, dynamic, creative, and challenging one. It is full of activity and finds its own ways to progress.

Iqbal (1944) believed that an individual could only develop his/her latent powers in an environment of freedom: freedom from the intellectual slavery of others and freedom from the over-organizing and

over-structuring of education. "Iqbal wants to bring up each pupil a free, daring, and creative individual of developed personality" (Tufail, 1966).

Iqbal (1953) believes that an individual cannot perform in his/her society in seclusion. The relation between individuals and collective millat, or Islamic nationhood has been described as precious stones put on one string, or waves in a river maintaining their own identities in the mass of water, and not like a drop of water getting lost in an ocean. Every individual, while maintaining his/her individual uniqueness, has to perform within the millat.

The individual exists in relation to the community,

**Alone he is nothing!**

**The waves exist in the river,**

**Outside the river it is nothing**

**(Iqbal, *Bang-e-dara*)**

Millat is like many reflective hearts joined together in lighting one big fire of passion to lunge for common ideals, or like a thousand eyes looking in the same direction, towards the same goals (Iqbal, 1953).

**The Unity of hearts bring the millat into being:**

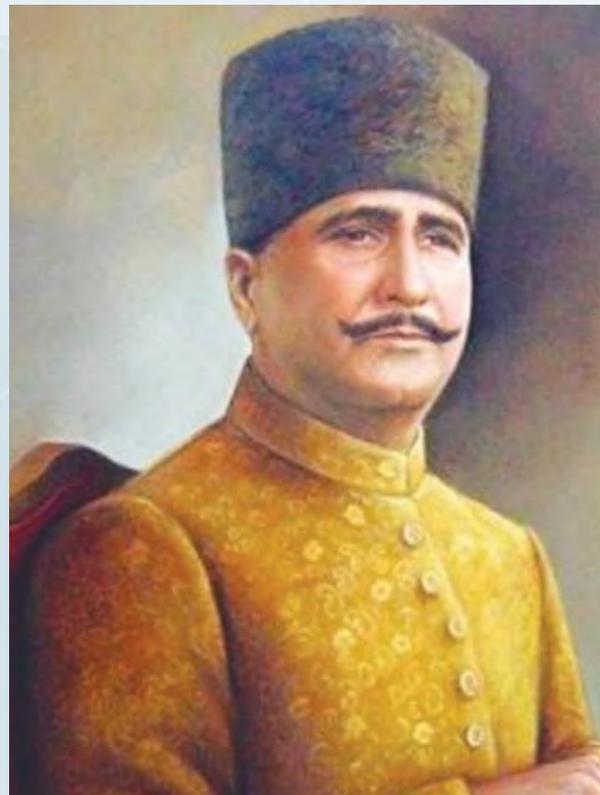
**This Sina is aglow with that single flame**

**(Iqbal, *Rumuz-e-bekhudī*)**

**What is Millat, ye believers in the oneness of God?**

**It means having one sight in a thousand eyes**

**(Iqbal, *Javaid Nama*)**



Thus, as per Iqbal's educational philosophy, every person has to be developed with a strong and unique self and prepared for performing within the community or millat. Abu Sulayman (1993) further elaborates, "Man's vicegerency on earth and in the universe requires him to act as guardian and deputy of Allah in dealing with the earth, the universe, and other creatures." The rallying post for the millat is the unity of God, where teachings of the Qur'an (Shariah) have to be strictly abided by, and the love of the holy Prophet (P.B.U.H.) used as a motivational catalyst in the discharge of duty as a vicegerent, or khalifa of the Creator on earth (Iqbal, 1953).

As a poet philosopher, Iqbal is unique in the sense that he is the only poet in the known history, whose inspirational poetry led to the formation of an ideological state - Pakistan. He is popularly regarded in high esteem by scholars, philosophers, and religious leaders for his dynamic philosophy and prophetic vision. "Iqbal is undoubtedly the greatest Muslim philosopher of the present century, and his philosophy has an inspiration and a message unique in the history of human thought" (Sheikh, 1972). "Iqbal became a legend within his lifetime, and his stature has only grown since. Pakistani nation is united in its reverence of this great ideological leader, but has failed in the practical implementation of his recommendations for a progressive and dynamic Islamic society.

اس قوم کو شمشیر کی حاجت نہیں رہتی۔  
ہو جس کے جوانوں کی خودی صورت فولاد

**Dr. Muhammad Abid**  
Coordinator Iqbal Chair

**Moeena Kausar Satti**  
Assistant Coordinator Iqbal Chair  
Bahria University (BUHO)

## 6. WRITER'S RELIEF



### AUTOBIOGRAPHY OF A BOOK

#### Beacon Of Original Knowledge

My name is "Book" or you can call me beacon of original knowledge. I have been an important part of human's daily lives since ancient times. I have been used for archiving history, sharing information and of course for telling stories to both adults and children. I have evolved with the passage of time starting from handwritten form to printed, and ultimately digitized form but my need for humans remains timeless.

I can be seen in the creation of ancient scrolls dating way back as a fourth millennium BCE, one of the first books ever written. I was made using a Papyrus plant and when unrivaled, could be between 14 to 52 feet wide rolled up manuscripts. Then Romans in the first century transformed me to the style of books that you know today. The Romans created some of the first codices that were more durable and compact than a scroll because it was made with parchment paper and bound with wooden covers. In this form, I was easy to carry and so became more popular with the rise of Christianity. At that time, the popularity of books was increasing day by day and soon the world turned to a more efficient way of making books with printing.

When in 1439 CE Johannes Gutenberg invented the first printing press, the world of books changed and came to the mainstream of knowledge. With this invention; printing of books, newspapers and pamphlets brought to the masses. The most significant form of me as a book came to the limelight when Richard Mulcaster created the first dictionary in the year 1582. Based on this, the Oxford Dictionary today has over 273,000 words in alphabetical order. In 1971, first digitization of texts was carried out that brought reading into the internet era. There are over 60,000 eBooks today and many other online reading resources to keep up with the digital era. But one of the most used online reading resources came to limelight in the form of google books which is almost as old as google itself. In 1996, Google Cofounders helped the Stanford Digital Library Technologies Project and in 2002, google books were officially launched as a secret project to start digitizing books all over the world.

I, as a book, feel proud and honored because the "Holy Quran" is also a book that spreads true and meaningful knowledge all around the world. Besides Muslims, the other religions too honor this book and regard it as the most significant knowledge spreading book for all races and times.

The importance of me as a book varies from places to places and countries. The more civilized cultured societies respect and honor me and give me a respectable place be it at their homes, offices, libraries etc. But unfortunately, there are certain areas where my importance is not recognized and so often throw me out as a scrap. So, ultimately found in the market for carrying groceries and other eatables in the form of envelopes. Time has shown that those countries and places have developed in almost all aspects of lives who honored me as a book and considered me as a "Beacon of Original Knowledge".

I as a book; from scrolls to eBooks have evolved over time but my significance remains timeless.

**Saima Syed**  
Chief Librarian  
Bahria University Islamabad

## MY UNSEEN TEARS

Alone is being when no one hears,  
Where no one cares for your unseen tears,  
Where time stops and be as it may,  
Being alone is where I'll stay.

Here alone I softly cry,  
Waiting here just to die;  
Darkness is where my secrets lie,  
And in this darkness I'll cry.

Another day full of sad emotions,  
That perhaps I didn't deserve;  
May be the loneliness in my life,  
Is it hard for others to observe?

Despite all the people,  
And world that goes round,  
My days are so empty,  
Like a piano without sound.

And with a sound of laughter loud in my ears,  
Living my memories, fighting my fears,  
I close my eyes, and hide my tears.

Maham Aijaz  
Digital Marketing Officer  
Directorate of Marketing (BUHO)

## 8. HOPE



### COVID-19 AND STRESS MANAGEMENT

*“Adopting the right attitude can convert a negative stress into a positive one”*

*Hans Selye*

Stress is a person's response to events that are threatening or challenging or an individual's experience of pain in reaction to perceived surrounding troubles. Stress can be caused by both internal and external factors. Internal factors include exaggerated worry or concerns, irrational thoughts, and unrealistic expectations, etc., while external factors are the major life events such as financial loss, relationship conflicts, severe illness, etc. These factors affect our physical and mental health. Therefore, it is essential to deal with the stressors of life at the initial phase, if not it can start impairing our personal, occupational and social life which later on leads towards psychopathology or disorder.

Stress can be positive when it helps us to meet the challenges or deadlines such as before exams or interviews etc. It also helps an individual to achieve his/her goal, improve performance, motivates us to do the tasks, and is basically for a shorter period. On the other hand, negative stress or distress is the form which can lead to different mental or physical problems. As we are living in a country where we all are facing different stressors on a daily basis. Sometimes the stress is due to the people and sometimes it's because of our environment. In the current situation, the Covid-19 outbreak has negatively impacted our life which is one of the major stressors for all of us nowadays. Facing issues in the online system of education, workplace issues, job insecurities, interpersonal conflicts, and social distancing can make people feel lonely and isolated which increases stress and anxiety. Now it's our choice to make a decision and analyze ourselves, recognize the reasons and causes behind our stress. It is important to take steps to reduce our stress in healthy and productive ways. There are different strategies for coping with daily life stressors such as taking proper sleep, eating a healthy diet, doing regular exercise, and connecting ourselves with your loved ones virtually helps to feel better. Moreover, psychological strategies include relaxation exercises like deep breathing, meditation; replacing our negative thoughts with positive ones, guided imagery, and positive self-talk, etc. All these strategies will help us to cope and go through challenging times.

Sadaf Zeb  
Lecturer

Department of Professional Psychology  
Bahria University Islamabad Campus

## COVID-19 AND RESPONSE OF YOUTH

The outbreak of a new virus, COVID-19 has been declared to be a Public Health Emergency of International Concern and characterized as a pandemic around the world (WHO, 2020). COVID-19 has currently affected 199 countries including Pakistan with the first outbreak of the epidemic in China Wuhan with an estimated range of 11% and Singapore 0.3% (Chen, Zhou, Dang, Gong, Han, Qiu, & Zhang, 2020). The shortage of healthcare resources places low income countries including Pakistan at a greater vulnerability to the disease, which has led the country to place the state in a partial lockdown (Hashmi, & Saleem, 2020) and emphasizes the need to identify interventions that can increase behaviors that limit disease spread and ensure social functioning.

Effective behavioral interventions seeking to improve the social response to COVID-19 need to consider the wide-range of challenges caused by the pandemic. Pakistan, like many countries, enacted several social policies to combat the spread of COVID-19. Citizens were encouraged to practice social distancing by remaining at least 6 feet apart from one another. Furthermore, all public areas including shopping malls, parks, restaurants, educational institutions have been closed and strict lockdown was implemented. Citizens were encouraged to practice good hygiene by washing hands frequently and using disinfectant. Additionally, the widespread fear that accompanied COVID-19 lead some people to become concerned that they may run out the basic necessities, leading to panic buying and hoarding of food products and other supplies. Together, these challenges highlight the need for behavioral interventions to increase social distancing, disinfecting behaviors, and COVID-19 news monitoring, while also decreasing hoarding behaviors.



Behavioral interventions also require careful consideration of the population they seek to target. In Pakistan almost 50% of the population is children and adolescents (Imran, Zeshan, & Pervaiz, 2020). Although young people are at a lower risk of displaying symptoms related to COVID-19 (Dong, 2020), they are still able to spread the disease. Further adolescents — defined as the period between 10-19 years — represent a unique developmental period that may pose additional challenges for compliance to COVID-19 recommendations. During adolescence, youth prioritize time spent with peers, which may conflict with social distancing guidelines. Identifying sources of variability in Pakistani adolescents' response to COVID-19 is an important next step to building effective behavioral interventions that limit the spread of the disease.

Recent research among adolescents in the United States suggests that adolescents' community attachment — defined as their sense of social responsibility, social trust, and low self-interest — are important individual differences that predict prosocial behaviors in the context of COVID-19 (Oosterhoff & Palmer, 2020). Because adolescents are at a lower risk of experiencing COVID-19 symptoms, many youth report that their motivations are to engage in social distancing and reduce the spread of the disease concerns a desire to ensure that others are safe (Oosterhoff et al., 2020). Youth who feel more attached to their community and demonstrate higher social responsibility, higher social trust, and lower self-interest, may be more concerned with protecting others and thus engage in prosocial COVID-19 behaviors. Similarly, this youth may be reluctant to hoard community resources and stay up to date on news related to COVID-19 as a means of ensuring others safety and well-being.

**Faiza Nisar**  
Lecturer

Department of Professional Psychology  
Bahria University Islamabad Campus

## GASLIGHTING



Gaslighting is a form of abuse in which a person influences someone to doubt one's own sanity. It causes feelings of powerlessness and confusion in targeted individuals (victim). Moreover, the person at the receiving end of gaslighting may not trust one's own feelings, memories and beliefs which make him/her dependent on the abusive person. Victims of gaslighting may experience anxiety, depression, isolation and even trauma in the long term. Gaslighting does not exist only in intimate relationships but if it exists, it makes a broader pattern of coercive control that is severe emotional abuse. In coercive control, abusers take control over one's partner's life by monitoring partner's daily chores, mobiles, finances. Moreover, abusers insult partners in the presence of others and feel one to embarrass and most important is to manipulate one into unwanted sexual activity.

To counter gaslighting, it is important to identify it within one's relationship. After identification, it requires to recognize patterns of underlying behaviors. Moreover, one can develop one's own support system along with work on rebuilding of self-esteem. People who are experiencing gas lighting may document evidence of abuse and may create one's own safety plans. Organizations dealing with domestic abuse and mental health professionals may also be helpful for people to handle the effects of gas lighting.

**Dr. Rizwana Amin**

Lecturer

Department of Professional Psychology  
Bahria University Islamabad Campus

## PSYCHOLOGICAL RESILIENCE

As humans we face different circumstances on a daily basis and as much as we wish things would just go our way, difficulties are unavoidable, and we all have to deal with them. Most of the time we get stuck up on the nature of our adversities but resilience theory suggests that adversities themselves are not that important but the important thing is how we deal with them.

Resilience is that wonderful force that assists us in surviving, recovering, and even thriving in the face of any adversity. Pakistani society has been facing adversities and difficult situation from the very beginning, like different natural disasters and the horror of terrorism. All such situations required a significant amount of resilience for our society to keep going and we as a society showed that resilience. Similarly, in the recent times of pandemic, the initial reaction of people was shock, disbelief and fear but eventually they coped and strived to bounce back with the new normal. Without the quality of resilience this wouldn't have been possible.

Resilience can be considered an in-born trait as some of the individuals are naturally more resilient than others but there's hope as many experts believe that people are very capable of learning the skills that it takes to become more resilient.

- 1) One of the ways to improve resilience is to reframe your thoughts by looking for small ways that you can take to solve the problem and make changes that will help, rather than dwelling on misery.
- 2) You can also seek support from people you can trust and confide in. This will help you relieve some of the pressure and discussing things with other people can also help you gain insight or even new ideas that might help you better manage the challenges you're dealing with.
- 3) Instead of dwelling on things that are out of your control, try focusing on realistic steps to encounter the problem and no matter how small these steps are, they can improve your sense of control and resilience.



**Aimen Zafar Butt**

Lecturer

Department of Professional Psychology  
Bahria University Islamabad Campus

## ROLE OF MINDFULNESS AT THE WORKPLACE



Mindfulness is a process of bringing attention, non-judgmental awareness, in the present moment. It is an idea that when a person is mindful, he is highly concentrated, focused on what he is doing, and aware of the purpose of what he is doing. The term mindfulness is used as meditation techniques, and in the present era, it is found in universities, prison, government offices and wellness centres. The mindfulness-based stress reduction (MBSR) is an original standardized program which is derived from the Buddhist meditation practice at the University of Massachusetts medical school. According to this plan, participants follow the instructions daily and practice it as coping techniques.

In the present scenario, the role of employees and their working environment are very complex to understand. Employees are not clear about their role and focusing on every aspect which may not be related to their work outcomes. Organizations are also focusing on multitasking individuals to get more output. But in this scenario, it will affect the employee's well-being and quality of work as well. To overcome these issues related to employee's well-being, job satisfaction and job performance mindfulness is an effective strategy. Mindfulness-based stress reduction training is more helpful for the employees in this context. It increases their access to emotional intelligence for work. It also positively impacts their energy and sense of well-being. Mindfulness enhances employee's well-being through improved communication, efficient meetings, better decisions and by greater understanding. It was also proved by different researches that mindfulness sharpens skills like resilience, memory, attention and leadership.

In future researchers need to focus more on mindfulness related techniques to overcome the employee's problems related to stress as well. It will help to identify the more positive features of this technique. We are all familiar with the role of social media and internet gaming addiction in the young generation. It was also proved that mindfulness helps to reduce the intensity of using social networking sites. By noticing all the positive outcomes of the mindfulness, organization, human resource department, and policymakers should need to invade it in their training and for employee's development.

**Dr. Haziq Mehmood**

Assistant Professor

Department of Professional Psychology  
Bahria University Islamabad Campus

## SOCIAL SUPPORT



Humans are a social animal; no one can live in the vacuum every person has a world around him or her. This world comprises people who have some social ties with that person some are in the form of family, some as relative, some as friends and other are as teachers or colleagues. They combine themselves to perform their tasks and activities, depending on each other and the various goals are achieved through the mutual collaborations.

This shows the interpersonal dependency of the people living in their social world, but when we move toward the person with disabilities they are completely or partially dependent on other people to perform their daily life activities. This support which they get from their primary circle like parents, siblings, peers and most importantly teachers while enrolled in schools, is known as social support for these individuals. This concept was first articulated by Cassel and Caplan in the 1970s.

Throughout the literature social support is defined in various ways, some defined as supportive communication, some as presence of close relations around a person and some with the supportive resources given by close social ties.

Social support is divided in further different types i.e. Emotional support, Esteem support, Network support, information support and Tangible support.

Social network benefited the individual in the following sense:

- 1) Sense of belonging. Social networks give the sense of belonging to an individual that there is someone to whom he can relay.
- 2) Increased sense of self-worth. Caring for family, friends and siblings gives a sense of value to the person by providing their presence.
- 3) Feeling of security. Social networks give access to information, advice, guidance and other types of assistance anyone needs them. It's comforting to know that person has people you can turn to in a time of need.

**Misbah Shafique Abbasi**

Lecturer

Department of Professional Psychology  
Bahria University Islamabad Campus



## TECHNOLOGY, HEALTH AND SOCIAL LIFE

Now-a-days life is fast paced and we all are trying to make-up for that pace but while doing so we are losing ourselves continuously. We are not only losing ourselves but also a very important treasure of our life and it's "our self". We start rushing as soon as we get up in the morning. Sometimes we skip our breakfast and sometimes we skip our lunch, sometimes we miss our daily walk and sometimes we miss our daily exercise and like that gradually we are missing our very important activities. These activities are ensuring our healthy life.

We also miss meeting "our" people by the word "our", I mean those people who are close to our heart and are sincere with us. We are rushing with the things and not realizing that we are missing so many things in our lives.

Sometimes we feel sad, gloomy, upset and down. Some people explain their condition as they feel like they are empty inside. They say that they have money, a big house and a luxurious living style but they are not happy. A very well-known scholar has said that "money cannot buy happiness". It's true because one can buy anything from money but not the happiness / health. Technology has provided us with lots of ease in our lives but it has made us isolated and less interactive. If we look back almost ten or twenty years back people used to sit with one another and share their sorrows and happiness but now people have enclosed themselves in a cage and they prefer online relations instead of real life relations. Relations are deteriorating and people are going far away from one another. The biggest reason behind this is their contact with the media via the internet. Ten or twenty years back people got the chance of "catharsis" that is they can easily vent off their feelings by discussing their issues and problems with others.

While discussing their issues sometimes they use to come-up with the solution of their problems and realize their own mistakes. By realization, they also had the chance of rectifying their mistakes. But now as because of the online life people have lost that human touch in their lives and are moving like a robot. They pretend, hide and mask the reality to have a good impression on others but inside them there is something broken in their hearts and mind, which is causing irreversible damage to their health and lives.

It's high time to realize what we have got from technology and what we have lost.... I am leaving you all with this thought that "use technology but don't forget to have human touch in your lives because as a human being we need that human touch"

**Shazia Yusuf**  
Senior Lecturer

Department of Professional Psychology  
Bahria University Islamabad Campus

## VALIDATION

Validation is part of being interdependent and relying on the feedback and encouragement of others around us. Everyone needs validation at any age or stage of life. Sometimes a single sentence can make or break a person. Even very independent people still need validation in some aspects of their life, however they are also able to accept their own self-validation if they do not get it from someone else. Actually validation means telling someone that what they feel, think, believe, and experience is real, logical and understandable. It can be from others around us or from our own self. Self-validation is when you are able to quietly reassure yourself that what you feel inside is real, is important, and makes sense. Emotions, thoughts, and sensations are all experiences that we sometimes doubt in ourselves. We not only ask ourselves regarding these issues but also question about associated feelings as well. (Is it the "right" thing to feel, even if it inconveniences someone else?).

We may look around us and try to guess what other people in the same situation feel, or what others expect us to feel. This happens because sometimes we have been told at some point that we should not trust what our inner experience tells us and we doubt. We actually trust other people more than ourselves. Sometimes when we self-invalidate, we spend a lot of time and energy trying to prove to others and ourselves that our experience is real, and makes sense. This often results in conflict, crisis or often works as seed for psychological distress. Validation does not mean that you agree or approve of behavior rather being non-judgmental and being true to yourself. Unfortunately, due to greed, gains or jealousy people sometimes delude validations they give to others. On the contrary genuine validation helps our relationships get better. It calms intense situations so that we can solve problems.



From childhood till youth attitudes of others in form of validation, along with perception of ourselves we develop and shape our personality. We self-validate because it quiets defensive/fearful emotions so we can solve problems. It allows us to let go of the pain and exhaustion that constant self-justification and self-doubt requires. Validation also improves the quality of our lives. But how do we do it? Here are some validation strategies to improve our lives:

1. Focus on the inherent worth of the person, whether it is yourself or someone else.
2. Observe—Listen carefully to what is said with words, expression, and body. Intently listen, be one-minded in the moment.

If you are self-validating, honor your experience by sitting quietly with it, knowing it for at least a few moments.

If you are validating someone else, use good eye contact, nod, and be one-minded in your focus on them. Specially dealing with children's validation and kind words help in shaping their positive personality.

3. Describe—Non-judgmentally state the facts of the situation.

4. State the unstated—Note the presence of feelings, beliefs, etc. that has not been voiced: "You seem to feel angry, but also hurt by what that person said to you."

If validating yourself, identify primary emotions. If anger is obvious, explore your feelings of any shame, hurt, or disappointment that may be hiding beneath.

5. Find what is true/ valid about the experience and note this. Without feeling that you have to agree or approve of the experience, find a piece of it that makes perfect sense, and validate this.

If validating yourself, perhaps you realize that the thoughts you are having are "irrational", however, validate that they exist and are powerful in the moment.

If validating someone else, even if you disagree with their behavior, find something that you can empathize with— "When you get that angry, you want to strike out at someone."

**Ambreen Fatima**

Wellbeing In-charge

Department of Professional Psychology  
Bahria University Islamabad Campus

## HOPE LIVES WITHIN OURSELVES

As human beings, we are made up of many emotions, such as sadness, happiness etc. We all go through various emotional experiences throughout our lives. Sometimes humans' ability to regulate these emotions becomes unstable or we face difficulty to manage them. It happens mostly when we feel unpleasantness or negative emotions. To overcome that situation of unpleasantness we have a wish to reduce the negative vibes or increase the pleasantness. We can call this desire to bring happiness or achieve a desired goal; that is Hope.

Have you ever wondered where this Hope comes from? How some people can develop hope in a certain situation and others cannot or feel difficulty. These are some questions which strike us in the adverse scenarios. Hope is not prevalent. We have to find it ourselves. It is a belief that life will be good, every dark time has an end and something good will take place in future rather than spending day and night dwelling in negativity. This energy that sparks hope is in every individual, we just do not know how to find the courage.

We all have experienced many ups and downs in life. If you recall any breakdown or any painful event of your life, what was your first reaction towards that? It was being upset or worried. It is a healthy and natural response to any sore event. But we use the term depression readily for natural sadness and most of us do not even know the difference between being sad and being depressed. We know sadness is a normal human reaction to any unwanted bad experience, we also know that it vanishes with the passage of time and life comes back to normal. On the other hand, depression is an unhealthy reaction and a clinical term that is used for a person who comes under certain criteria, which is completely different than sadness in terms of duration and intensity. Our focus should be on how we can prevent the process of becoming a part of a healthy reaction rather than an unhealthy one.

Identification of emotions is a critical part of creating hope to resolve a difficult situation. For that, we need to assess our emotions regularly; if your sadness doesn't go away, if it gets deep and intense, if it starts disturbing your daily routine, this should be an alarming situation and you should start working on it. You can seek professional help if it is available. If not, then you can do a few things at your own. First of all, you need to accept the situation which has happened in the past, because it has been done and cannot be changed. The one thing you can change is your future. Sit quietly and think whether you want a happy life or you want to continue life with this misery.



Accepting bad situations is not an easy task but it is a key towards pleasantness and developing a wish to change the present situation to the desired change. This experience is called being hopeful. Being hopeful is a continuous process that consists of realistic efforts being put into action. Our primary goal after accepting the situation can be finding the elements or characteristics of the situation in multiple dimensions to get a better perspective about it. It gives complete knowledge to develop interventions. In this process of finding hope or courage to resolve the situation, knowledge is the key. For example, the root cause of your emotions which develop unpleasantness around you, having insight about yourselves (i.e: your strengths and weaknesses). Furthermore, we need to evaluate them rationally to see how realistic they are.

Every person has a different way of processing the above-mentioned steps because the thought process of every individual is a product of their characteristics and their own life experiences. We all are surrounded by our own biological, social, and personal circumstances. Understanding our circumstances gives us the courage to fight our own battle rather than expecting solutions from others or waiting for others to bring change in our lives. According to Allama Iqbal:

خدا نے آج تک اس قوم کی حالت نہیں بدلی  
 نہ ہو جس کو خیال آپ اپنی حالت کے بدلنے کا  
 اقبال

Everything helps us create hope in our hands. It is our choice to be miserable or feel the energy to resolve a difficult situation. If you choose to be hopeful nothing can bring you down or hold you to prosper in the journey of your life.

**Noreen Fatima**

Lecturer

Department of Professional Psychology  
 Bahria University Lahore Campus



## 9. TECH IN 20

### BLOCKCHAIN IOT SERVERLESS ENVIRONMENT

#### Introduction

IoT-based community applications help users to improve their lifestyle and health. Indeed, there are social applications such as water quality analysis, air quality analysis, energy reduction technology, intelligent electric vehicles, corporate mobility and COVID monitoring of patients. Researches have attracted several scientists to develop advanced technologies, including cloud-based IoT / advanced information technology. In addition, legislators and industries are encouraging researchers and product manufacturers to develop socio-economic solutions using the latest technologies, including blockchain. Traditionally, IoT-based social applications have been designed using centralized and reliable methods, including financial commitments between the consumer and the cloud company.

#### Description

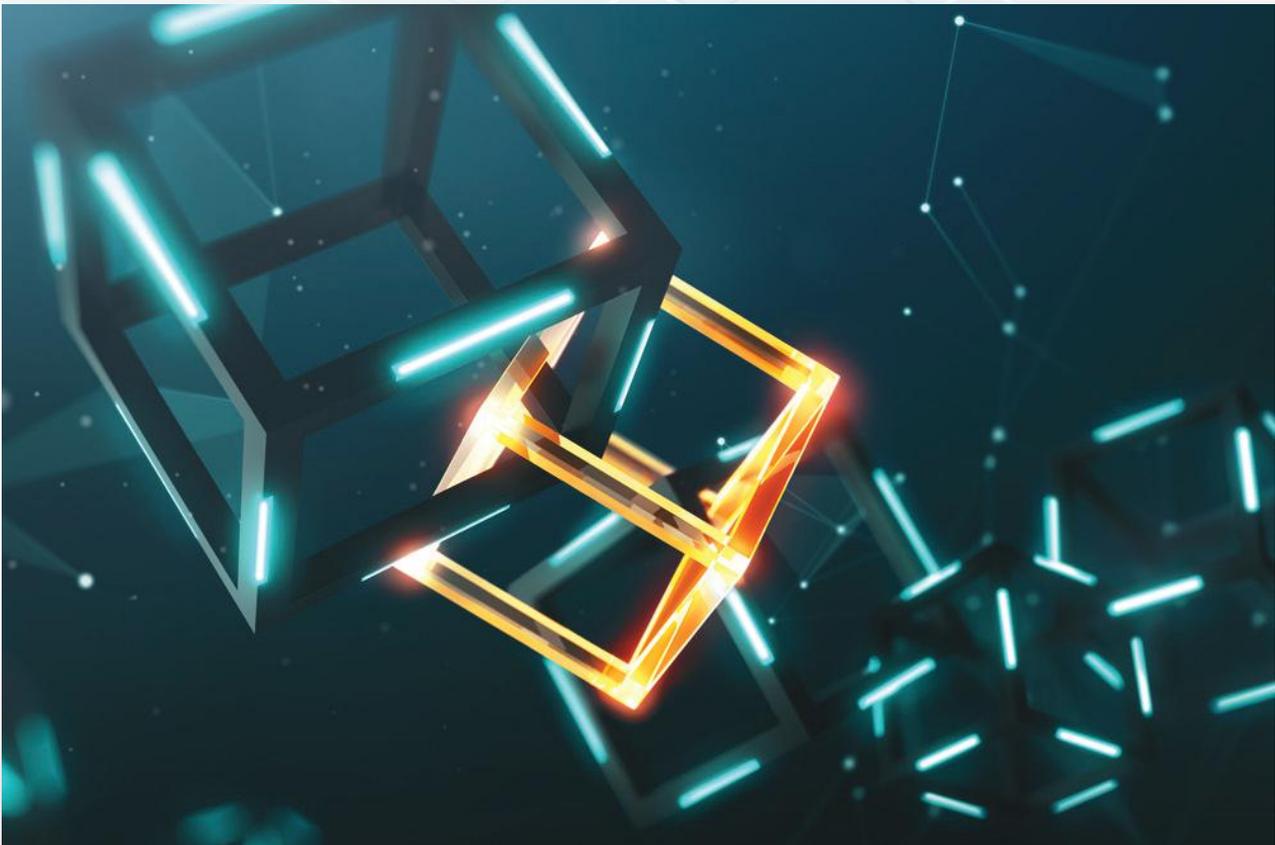
The server-free blockchain architecture of IoT applications, blockchain technology is a direct distribution to a large directory used to track scores or exchanges without involving trusted users. The technology covers three areas, including smart operations, tools, and contracts. Using blockchain technology and fewer dedicated servers in IoT architectures can enable energy savings and

fewer dedicated servers in IoT architectures can enable energy savings and productivity in application, especially in community based IoT applications. IoT based architecture uses low server blockchain for social applications, covering the impact of server less features of cloud computing. Typically, IoT applications have the ability to record sensors data, process data in the cloud and make system decisions. Many social applications, such as smart agriculture, pollution and intelligence, lead to a better understanding of the urban population.

IoT-enabled social applications have three main purposes. Mist is used in applications to measure materials, such as temperature and humidity. Mixed nodes can be minimized to achieve the results collected from the instrument using microcontrollers; they usually use battery operated hardware that has a different size. Air pressure gauges are carefully classified according to the type of air fume and flue gas emitted. IoT applications, such as weather or water monitoring, provide content links for users to access applications over the Internet. The interface, used as a cloud-based server, allows users to view, edit, or analyze based on data sensors. It is usually designed to use fast, selected color fonts and colors. Users, administrators, and developers interact with cloud services by capturing after a secure cloud.

After creating an application, it detects data from the cloud. As previously discussed, good weather monitoring includes three main components, namely power nodes, network nodes and actuators. It shows good environmental control, where good air listening is set up in many rooms, in offices, and in smart cities. It is an important responsibility for urban workers to be directly involved in these business plans and to maintain ethical practices. New developments in community areas, such as agriculture, health, industry and climate or smart cities with good water quality, have resulted in technological advances, including IoT. It has unveiled blockchain based IoT architecture for IoT-compatible applications. It describes operations that can take without any problems like server less and explains how blockchain can be included with more secure transitions. This is especially true when considering the power consumption of new IoT technologies.

The future of IoT is indefinable due to advances in the use of technology and the desire of consumers to integrate devices such as smartphones with home devices. Wi-Fi allows people and machines to be connected between land, air and sea. In the Internet of Things, there are some interesting apps that make our lives easier, like Health, Transport and Agriculture. However, several important factors, such as security, privacy and data retention, have yet to be determined.



**Junaid Nasir Qureshi**  
Senior Lecturer  
Department of Computer Science  
Bahria University Lahore Campus

# MACHINE LEARNING CAN INCREASE BUSINESS REVENUE

Quickened business development has consistently been about advancement in functionalities, for example, client experience, worker executives, and others. Also, with cutting edge AI advancements, organizations are presently ready to roll out valuable improvements to bring better outcomes for their organizations.

The greatest preferred position of AI in the corporate area is the capacity to settle on mechanized choices without facing challenges in any way. This is the reason the corporate area is expecting **\$60 billion income with AI by 2025**. An ever increasing number of organizations are incorporating AI into their organizations to develop different perspectives.

## Bringing Personalization To Customer Service

Organizations continue searching for powerful approaches to improve the nature of client care and decrease the speculation prerequisites. What's more, AI offers those definite answers to get those objectives. With ML advancements, organizations get the capacity to join their long stretches of information identified with client benefits and combine it with common language preparing innovation.

The NLP calculations make client associations more close to home by utilizing the information to offer palatable assistance. Every single client finds the most precise solution to their inquiries, which fulfills them. In addition, a similar innovation lessens the requirement for an excess of speculation, bringing about lower client adjusting costs.

## Making Recruitment Process Convenient And Successful

For quite a while, employing and enrollment measures confronted numerous battles. The trouble is shortlisting the correct competitors, eliminating the human pre-dispositions, asking the correct inquiries and keeping it practical for spotters.

Yet, presently, with AI, it is conceivable to get mechanization of the employing cycle. Corporates are presently ready to waitlist up-and-comers among a huge number of utilizations without skirting an important up-and-comer. The AI apparatuses can examine accreditations and match them with significant employment profiles.

Additionally, a similar innovation can recognize inclinations and eliminate those elements while leading the appraisal. Everything makes AI a financially savvy and effective method of recruiting individuals.



## Improving Finance Management And Handling Methods

AI likewise offers the ability to oversee monetary cycles of an organization. Truth be told, the cycles, for example, installment, receipt examination, and others can get programmed with AI.

Countless solicitations can be dissected in the blink of an eye. The organizations can decrease their endeavors and time on dealing with their accounts and set aside a ton of money as well. Also, the security of AI innovations gives assurance to the cycles simultaneously.

## Marketing And Management

Advertising can likewise get inventive outcomes with AI. The AI apparatuses are as of now being utilized in social event client information, store network, the executives and different cycles.

Organizations are utilizing AI apparatuses to discover information related from web-based media about items, logos, and different variables. This information is utilized to make a superior brand openness and to get effective results.

All things considered, AI offers development to pretty much all aspects of a business. Along these lines, it is insightful to incorporate right devices and calculations to improve ROI and make a business triumph.

**Nadeem Sarwar**

Assistant Professor

Department of Computer Science  
Bahria University Lahore Campus

## GREEN CLOUD COMPUTING - CURRENT TO FUTURE TRENDS AND FUTURE CHALLENGES



Past few years, consideration in 'Green Computing' has moved inquires about energy-saving strategies for home computers to undertaking systems' Client and Server machines. Saving energy or diminishment of carbon impressions is one of the viewpoints of Green Computing. The interest is to expand the energy consumption of server farms definitely. This can be turning into a major issue. Thus, it requires green cloud computing effectively to save imperativeness and reduce operational costs and carbon outpouring which isn't neighborly for the soil. Hence, imperativeness successful courses of action ought to be utilized to diminish its effect. To achieve this, sufficient data on the cloud is required. On a very basic level our guideline commerce is to entangle the answer for enabling long-term investigation on green cloud computing. The plausibility of how cloud clients can be important to achieve this objective. Furthermore , approximately the preferences of Green Cloud Enrolling and furthermore manages the diverse points to diminish the imperativeness utilization by cloud computing and diminish the carbon dioxide level. These variables are supporting the prerequisite for green cloud computing and the highlights of the cloud which engage green enlisting. Nowadays cloud computing has become a noteworthy arrangement to address the challenges in capacity and handling of tall

volume information, with low-cost, high-speed, on-demand and pay-per-use characteristics. In spite of the fact that fast movement has been recorded within the region of cloud computing and its administrations, achieving the usage of green clouds is still beneath advancement due to the need to inquire about and a few boundaries in its usage. Green clouds are committed to plan as eco-friendly, vitality effective, max asset utilizable, carbon emission outflows, long enduring and recyclable. In arrange to fulfill the ever developing endeavor information capacity and preparing needs, the cloud benefit suppliers are coming up with cutting edge innovations like Green Cloud Computing in cloud engineering plan to decrease, the colossal control utilization, water utilization, require of physical equipment peripherals, foundation and destructive carbon outflows etc.

Since 10 years cloud computing has turned into the perfect calculation stage for business associations and encourages the business visionaries to focus on their crucial business activities instead of putting away their time and cash on the foundation of the executives. The cloud computing offers different administrations like IaaS, PaaS and SaaS, to attract the business applications proprietors in receive and relocate the cloud administrations to their business application modules.

Cloud based server farms, stages, servers and furthermore the other framework administrations are sufficiently flexible to give the rapid interest of giant assets from clients.

## Green Information Technology

Green computing should address environmental sustainability mainly by focusing on strategy, manufacture, use and removal of computers and other related devices in an ecofriendly way.

Green data advances and frameworks allude to activities and programs that straightforwardly or in a roundabout way address natural supportability in organizations. In spite of the fact that professionals have started to focus on 'Green IT', there's small investigations in this region. To arrange for this inquiry, we create a multilevel investigation system to direct future investigation. To do so, we audit the existing green data innovation and systems writing; conjointly draw more broadly from research that addresses natural supportability within the administration, natural brain research, and social showcasing spaces.

## Need For Green Cloud Computing

As part of the research on "Green Cloud Computing", we analyzed the research papers to get the valid content about green cloud computing and its characteristics. Each research activity in the area of green cloud computing is explored on ideal power management techniques, while operating the web servers at their low level of utilization, without any effect on its performance. They considered the system logs as the main input sources, to get the energy consumption values of a web server at various levels of utilization. They introduced an efficient power simulation mechanism to monitor the CPU and other resources consumed energy values, which helps in forecasting the future energy requirements.

The energy efficiency, to explain how to reduce the power consumption of data centers without effecting on the server performance and availability. Finally he suggested that the utilization of possible low voltage resistant processors, deployment of power management tools (to monitor and auto management of power), virtualization techniques (to increase the processing power with same resources), design of blade servers and efficient cooling mechanisms are the best practices to design energy efficient clouds. They designed an NS-2 based simulator to record the power consumption at green cloud data centers. They simulated and monitored the servers, routers, links, switches and workloads to determine the power consumption at each entity level. This simulation environment collected different cloud components related to important power consumption statistics like extreme high/ low power usage values at each component, component idle state power usage, component average power usage etc.

## Green Cloud Future Challenges

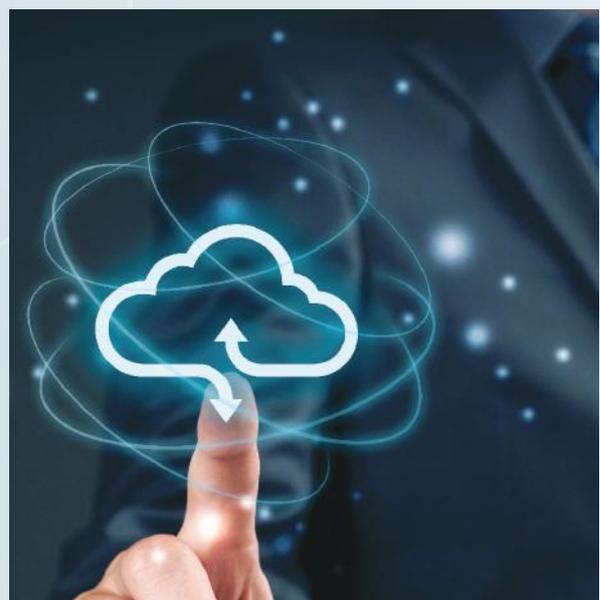
**Energy Efficiency:** As the today clouds are designing with the multi-core CPUs, there is a need of designing the power optimization and management techniques to support the power management with multi-core CPUs. Another huge power consuming part of cloud is the data center, which is a collection of data storage components and data management software.

**Virtualization:** Many former researchers were widely concentrated on designing the efficient cloud virtualization process, but the virtualization is still suffering from some high-end optimization relevant limitations. Planning the novel approaches with the state-of-the-art technologies to optimize the entire lifecycle of the virtualization process is an important research challenge.

**Multi-Tenancy:** This is a vital character of green cloud; at present multi-tenancy is suffering from privacy and security concerns. Designing the secured multi-tenant architectures and privacy- preserved secured access to multi-tenant modules are the considerable future research challenges.

**Consolidation:** Design of intelligence support in VM's consolidation, Multi aspect based threshold value calculation, leveraging the key resources and server downtime management became the future research challenges in this area.

**Eco-Friendliness:** This character mostly concentrates on environment based tools design i.e. carbon emission calculator tools to measure the effect of the cloud on nature. Need to design a comprehensive framework to certify the clouds with ranking, based on multiple aspects of Green Cloud Computing.



## Green Cloud Computing and its Current Trends

Green cloud computing is a win-win model between the cloud service provider and the surroundings. Green cloud now not only beneficial to the surroundings, it additionally will increase the profits of providers by means of using the assets effectively. By insisting on some management rules and traits within the existing cloud surroundings, we are able to lead them to green certified clouds. In this phase, each green cloud man or woman associated basic definitions, implementation methods, unique information and the modern tendencies.

Cloud computing is used for numerous computing techniques. It is used as energy saving by victimization power management. Several OS use the ability management theme for power saving. There are several product e.g. surge protectors which will save and conjointly referred to as servers within the cloud. Therefore cloud computing can facilitate the businesses to urge their large servers that consume a great deal of energy. In returning time cloud computing is employed in areas like networking, knowledge storage and in operation systems. During this manner of operating it'll save a great deal of your time and energy by shifting to cloud computing design for the net energy. The protectors can notice once a pc is converted and that they can then mechanically turn out any peripheral devices like scanners and printers for energy saving.

To accomplish the destinations of the investigation, the semi test plan a pre-test post-test procedure and similar examination configuration approach were utilized. The pre-execution evaluation was performed on a current framework through electronic and locally open survey with chosen partners/things accommodated chosen outpatient staffs of Karat District Hospital to recognize related issues. The information was then broken down and the outcome was introduced utilizing SPSS. After issue legitimization, meeting and specialized perception were utilized to accumulate further realities to plan and execute an answer model. At last, a Green PICCS model for exhibition and approval was created and conveyed. It was created utilizing ASP.NET and MS SQL Server.

**Imran Memon**  
Department of Computer Science  
BSEAS<sup>(3)</sup> Bahria University Karachi Campus

# THE INTERNET OF THINGS AND ITS SECURITY ASPECTS



The Internet of Things (IoT) is one of the major upcoming networking technologies and part of the fourth industrial revolution, referred to as Industry 4.0. In IoT, connected devices can send and receive data without any human interventions. IoT plays an important role in increasing the growth of connected devices around us. According to Gartner's research, it is expected that by 2022, 20.4 billion devices will be connected worldwide. Furthermore, the usage of IoT technologies is increasing and is further speculated to increase day-by-day in various application areas.

This utilization makes IoT as one of the leading derivative markets that might build a base for developing major economic growth. It is estimated that the IoT sector will raise revenue of \$892 billion (2018) to \$4 trillion (2025). As IoT has the potential to perform a tremendous job in facilitating various areas using different applications and services, issues of security and protection arise as well.

Recent incidents showed that exploiting IoT related vulnerabilities through cyber-attacks can result into significant adverse impact in many application domains. In a smart-home environment, an intruder can eavesdrop the activities of family members, take control over the power supply and unlock doors. Other possible cyber-attacks may result in compromising IoT devices, either for launching ransomware attacks, Distrusted Denial of Service (DDoS) attacks from millions of IoT devices making business and social websites inaccessible for a long time. Mirai botnet was a case of cyber-attack through IoT devices which overwhelmed several high profile web-server targets with massive DDoS attacks in April 2016. In February 2020, the multinational technology company Amazon experienced 2.3 Tbps DDoS attack as being the largest ever recorded DDoS attack in history.

Typically, the smart devices in IoT are resource-constrained with very limited processing power, memory storage, and energy source that are not sufficient for running resource hungry security

solutions. Various security solutions such as resource intensive (encryption algorithms, Secure routing protocols, and trust management), have been proposed to secure IoT based environments. Among these solutions, Machine Learning (ML) based cyber-attack detection techniques have gained considerable attention in the past few years such as the detection of an intrusion. However, most of the ML approaches are resource hungry due to the constrained nature and heterogeneity of IoT devices, while these solutions are more effective to deal with the sophisticated cyberattacks. The constrained resources generally observed in IoT devices makes it very challenging to secure them from sophisticated cyber-attacks. Considering the constrained nature of IoT devices it is required to design lightweight security solutions by understanding the limitations in terms of storage and processing power.

**Engr. Mahawish Fatima &  
Dr. Osama Rehman**

Department of Software Engineering  
(BSEAS)<sup>3</sup> Bahria University Karachi Campus

## COLLABORATIVE UBIQUITOUS LEARNING:

### Making Recruitment Process Convenient And Successful

In recent years, there has been a prevalent traditional pedagogical approach where instructors use one-fits all approach. This is not found to be very productive in developing critical thinking in students. Further, student engagement is also an issue with traditional approaches as students do not ask questions or actively participate in the learning thus acting as passive listeners. Hence, pedagogy is shifting from teacher-centred to student-centred learning.

Critical thinking enables students to assess their learning styles, strengths and weaknesses, and allows them to take ownership of their education rather than relying on teachers and classroom time for instruction and guidance. In its most basic expression, critical thinking occurs when students are analyzing, evaluating, interpreting, or synthesizing information and applying creative thought to form an argument, solve a problem, or reach a conclusion. As students learn to think more critically, they become more proficient at historical, scientific, and mathematical thinking. They develop skills, abilities, and values critical to success in everyday life.

Yang and Chung argued that the earlier critical thinking skills are cultivated the more effective they are integrated in the student thinking and learning process. Hence student-centric approaches are more productive in developing these skills in students as focus is on the learner's perspective through creating independent learners via pushing the responsibility of learning on students thus students define their process of conceptual refinement and purpose solutions where the role of the teacher is to provide a guided response to facilitate the learning.

Constructivist learning environments can offer students the kinds of learning experiences that will foster the development of critical thinking skills, possibly leading to higher levels of overall achievement. The role of the teacher and other learners is to provide the setting, pose the challenges, and offer the support that will encourage cognitive construction. Furthermore, when children cooperate in collaborative learning groups, they share the process of constructing their ideas with others. This collective effort provides the opportunity for children to reflect on and elaborate not only their own ideas but also those of their peers as well.

Furthermore, inquiry-based environments that are supported by the learners' real-world experiences, but it is mostly being applied to classroom or lab environments. With the advancement of technology, the learning environment has evolved from e-learning to u-learning (ubiquitous learning) due to the



availability of the internet and smart devices. These technologies have provided new opportunities to carry out new learning strategies by integrating real world learning environments and the resources of the digital world to introduce technology-enhanced inquiry-based activities.

Thus, Inquiry-based ubiquitous learning has changed the context of learning and education in today's world that can assist learners and may enhance the learning experiences by making it more interactive and engaging for learners. Nevertheless, it has been found that the level of students' engagement may influence their inquiry learning effectiveness. That is, an effective inquiry based learning activity still depends upon a higher level of participants' motivation.

On the other hand, agile education is gaining popularity for its implementation in the classroom to create an adaptive and collaborative learning environment due to its iterative and incremental nature. Moreover, agile has been effectively used in the academy to teach software engineering, mostly with a project-based learning approach where the final learning product is software produced simulating the agile practices in small groups. Agile based approaches are more suitable to project-based learning, where collaboration between team members is effectively utilized. Therefore, this approach may improve collaboration during inquiry based ubiquitous learning activities.

Engr. Bushra Fazal & Dr. Sohaib Ahmed  
Department of Software Engineering,  
(BSEAS)<sup>3</sup> Bahria University Karachi Campus

## HEALTH DIAGNOSIS SCHEME

### In-Service Low Voltage Aerial Bundled Cables Using Super-Heterodyned Airborne Ultrasonic Testing

Overhead power transmission lines are critical infrastructure used in electricity distribution networks. Sheathed conductors are preferred over bare wires in many European and African countries as well as in Australia, North and South America. Using bare conductors results in frequent failures, especially for electricity distribution close to high-rise buildings and trees that increases maintenance cost. Bare conductors are also prone to electrocution incidents, faults, and power losses especially during monsoon season. The bare conductors also collide during high wind conditions, resulting in molten metallic particles to be released causing bush fires. Low Voltage bare conductors melt down at a critical point, under high electrical loads, leading to the conductor breaking and eventually short circuiting due to contact with conductors of other phases.

It is also detrimental for the connected electrical equipment. Overhead conductor's failure modes are classified on the basis of external factors, natural factors, installation techniques, maintenance and operations practices, equipment failures and user interventions. External factors lead to distribution failure due to construction works, theft of installed conducting cables and flying kites entangling with bare conductors. Natural factors may include damages to cables due to lightning, hurricane, earthquake, snow, fire and rain. Improper installation refers to lack of protection from animals and falling trees and overloading the line electrically while improper maintenance may include not eliminating faults on time.

Issues in bare conductor transmission lines are addressed by insulated power lines, which are usually more reliable in terms of useful life. The most common insulated cable in the system is Aerial Bundled Cable (ABCs) which is also safer to use in forest areas where bare conductors can easily cause short circuits through leaning trees. Use of insulated conductors also eliminates the risk of possible contact between different phase cables, so chances of short circuit or electrocution are minimized. ABC insulated conductors also have reduced maintenance requirements, pilferage, power outages.

Karachi is the densely populated coastal industrial city of Pakistan with a population of over 20 million. In Karachi, the conventional distribution system was a

dense network of bare conductors near transformers and in narrow alleyways making tapping of these lines an easy task using illegal hook connections with jumper cables. Further, the electricity pilferage was a serious issue in Karachi, which had cost a huge loss to its premier electric supply company.

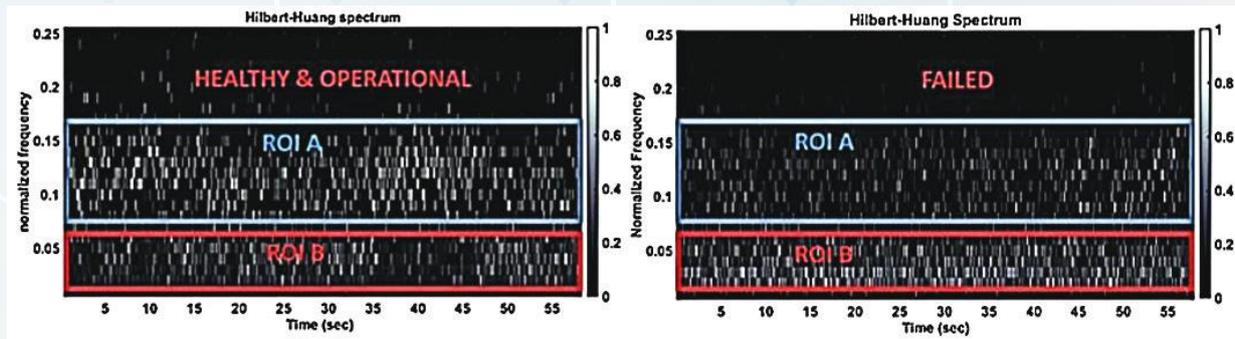
Hence, maintaining proper electricity distribution network in said metropolis was a challenge for Karachi Electric (K-Electric). To cater these issues, K- Electric has been progressively replacing conventional cables in Karachi with Aerial Bundled Cables since 2012. This has significantly reduced the electricity pilferage, power losses, tripping and short-circuiting incidents in Karachi. ABC cable consists of four thick insulated wires used for three phase supply with neutral wire.

The exposure of these insulated cables to harsh coastal environments reduces its useful life. The major damage occurred in ABC cables is in the form of insulation ruptures. Rupture of insulation in aerial bundled cables can cause short circuiting of phase conductors with the neutral conductor. Once the conductors are exposed due to damaged insulation in ABCs, incidents pertinent to bare conductors can prevail. Since the cables with damaged insulation are bundled, and live and neutral conductors are in very close vicinity in ABCs, any contact with these exposed conductors increases the chances of electrocution. This creates a major threat of electrocution not only to maintenance staff but also hazardous to wildlife. However, the identification of damages to ABC cables have been a challenge because the damage is mostly concealed under the insulation and visual inspection is impossible.

These situations demand non-destructive testing of these installations to locate and identify the intensity of damages. Usually, thermal infrared (IR) method is used to inspect the insulated cables because heat generation above normal levels is one of the symptoms for assessing cable damages. However, this technique has issues in the presence of solar radiation and background residual heat which effects health diagnosis and requires post processing.

High frequency partial discharge is considered as another major indicator of the cable health assessment as the phenomenon generates high frequency radio and airborne ultrasonic signals. Thus, prominent NDT techniques used for evaluating overhead cables health are focused on assessing partial discharge levels and temperatures. The ultrasonic probe listening based testing technique is another method which detects the degree of ionization of the air surrounding the ABC cables, which is a result of damage to the insulation and high intensity of corrosion on the exposed

conductors. This technique can give a fair measure of the insulation health and is used in various research approaches. Our research group in the electrical engineering department of BUKC is working on a novel framework to discriminate between healthy and degraded ABCs of varying degrees, installed in coastal areas of Karachi. The framework incorporates the super-heterodyned ultrasonic listening to capture the cumulative damage in Low Voltage (LV) ABCs which is then processed to extract time-frequency-energy features. The data of inspected cables are compared with the data of reference faulty cable to identify the level of damage. This will help the K-Electric to take necessary maintenance and replacement activities well in time before the time of failure. Hence, ensuring continuous power supply to the metropolis Karachi.



HHT Spectrum Analysis of healthy and faulty cable.

Taimoor Zafar  
 Department of Electrical Engineering  
 (BSEAS)<sup>3</sup> Bahria University Karachi Campus

## 10. BUSINESS INSIDER



### COVID-19 AND CHILD MARRIAGES IN PAKISTAN - GIRLS NOT BRIDES

#### Overview And Rationale

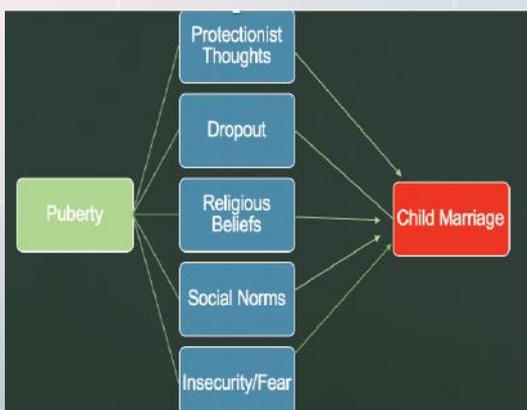
The eradication of child marriage is an important and acknowledged challenge for global policy. Early and forced marriages recognized as a girl or boy being married or forced to be married under the age of 18. Child marriage is a human rights violation and illegal according to human rights standards and international human rights obligations. It is prevalent in our society and Pakistan is having a sixth absolute number in child brides and South Asia is on the top in the world. There are several reasons for child marriages in the world but the main reasons for child brides in Pakistan are poverty, the notion of girls' protection, cultural practices, and conservative religious interpretation. Girls are often regarded as a financial burden because

Customary cultures and traditional harmful practices in Pakistan reinforce early marriages. There are several practices that condone child marriages, such as Swara/Wanni, where girls are given in marriages to settle disputes or debt, this continues in rural communities and is often approved by local Jirga/Punchayat. Watta Satta (bartering for brides) and pait likkhi i.e. marrying girls off before they are born or incredibly young.

Wrong and conservative religious believers of people made their daughters be married before the age of 18. It is also strongly believed by the local community that it will be easier for in-laws and husbands to make younger girls work and obey their orders.

There are several undesirable socio-economic issues that result from early and forced marriages. Early pregnancy causes serious health issues in mother and child; it increases the complications during the time of delivery which sometimes causes the death of the baby or both. Child brides are isolated and have limited freedom of mobility and choice, and they are deprived of their fundamental rights to health, education, and safety.

These young age girls at the age of playing and getting education are not mentally and physically ready to become mothers or wives. They face domestic violence and abuse and are mostly treated as maids for household work after marriage. The onset of puberty triggers: i) protectionist approaches among families towards the girl because she is considered to have "grown-up" and due to the perceived need to control adolescent sexuality in particular for girls; ii) fear of sexual violence and insecurity, particularly among religious minorities and low economic groups; iii) patriarchal religious conditions, and insufficient Water, Sanitation and Hygiene (WASH) facilities at schools. Consequently, the onset of puberty puts girls at risk of becoming child brides.



In 2017, the demographic and health survey (DHS) of women in Pakistan in their early twenties showed that 39.5% had been married before the age of 18.



## Impact Of The Pandemic

Historical evidence shows that the eruption of any pandemic or occurrence of natural disaster increases the severity of harmful practices in society. The world has learned from Ebola spread how it increases the violence against women and girls including child marriages. Due to the shutdown of the schools and cities, everyone was locked in their houses to prevent themselves from the virus.

To take care of domestic chores or younger children, girls have been forced to stay home. Others are obliged to generate income: the number of girls aged 12 to 17 working outside the home has risen by 19 percent, a report by the International Development Center. According to the United Nations Population Fund (UNFPA), teenage pregnancy has risen by 65 percent in some areas of Sierra Leone. Teen pregnancy and maternal mortality rates have already been among the highest in the world. In addition to births, aid officials reported a sharp rise in child marriage and forced marriage.

## Covid-19 And Its Impact On Early And Forced Marriages

WHO declared COVID-19 a pandemic on 11th March 2020. The COVID-19 is already having a harmful effect on families, societies, and economies, and the full impact on the poorest countries and those with weak systems of health, social security, connectivity, and governance remains to be seen.

Although it is too early to discuss how covid-19 is affecting child marriages yet in Pakistan through indicators we can link that how covid-19 can impact early and forced marriages in Pakistan. As COVID-19 is affecting economies badly, this brings fear in families of the high amount of dowry and fear that their daughters will remain unmarried, so they start making their daughter brides before their 18th birthday. In rural areas, the small, aged girls can carry less dowry amount as compared to adult or old aged, so this triggers the issue.

Poverty is increased due to covid-19 and there is an increase in unemployment and inflation which forced the poorer group to practice radicial cultures like bride price. Income decreased as businesses and factories were closed in lockdown and badly affected the farmer groups who supply their products to factories and lost their income. The rural people were forced to pay off their debts in form of their young daughters (Swara culture). Due to lockdown, interfamily marriages also increased, and some families took advantage of the lockdown as the large marriage ceremonies are banned so few families took advantage and married girls without looking at their age to save expenses.

## Existing Policies In Pakistan To Control Early And Forced Marriages

Pakistan has the child marriage restraint act 1929 which is amended by Sindh in 2013 and Punjab in 2015. In the child marriage restraint act 1929 which is amended by Sindh in 2013, under this act the legal marriage age both for boys and girls is 18. Under the law any male above 18 years of age, married to a child shall be punished with rigorous imprisonment which can be up to three years but not less than two years with fine. Whoever solemnizes or conducts a marriage of minors is punished with imprisonment which may be extended to three years but not less than 2 years, along with a fine. Guardians and parents will also be punished if they facilitate or organize the marriage of a minor, with imprisonment of up to 3 years but not less than 2 years, along with a fine.

Not only this any person promoted or fails to prevent it negligently, from being solemnized will also be punished. The child marriage restraint act 1929 which is amended by Punjab in 2015; the legal marriage age of a boy is 18 but 16 years for girls. An adult, who marries a girl under 16 and a boy under 18, can be punished with imprisonment of up to 6 months and a fine of Rs. 50,000. Nikah Registrar who solemnizes or conducts a marriage would also be punished with imprisonment of 6 months and a fine of Rs. 50,000.

Guardians and parents or anyone who facilitated the child marriage will also be punished if they facilitate or organize the marriage of a minor, with imprisonment of up to 6 months and a fine of Rs. 50,000. Khyber Pakhtunkhwa and Balochistan Child Marriage Restraint Act 1929 is yet not amended and carries the same provision which is outdated and very old. The legal age of marriage for boys is 18 and girls 16 years. Adult male (age 18 years or above) contracting child marriage (when the female is less than 16 years of age) is punishable with simple imprisonment which may extend to one month, or fine which may extend to one thousand rupees, or with both, and same goes with parents, guardian, Nikah registrar and any other person who is involved in facilitating child marriage, However, any woman offender is exempted from the punishment of imprisonment. There are also child protection bureaus in federal and provincial capitals. Helplines are available for police reporting and some of the far protection.

## How We Envision The Future Of Girls In Pakistan?

We seek a future where girls have the opportunity to live as children up to the age of 18 years with dignity, free of violence, and discrimination. In this, we seek the underlying causes of discrimination to be eliminated so that girls have equal access to rights, opportunities, and resources, including knowledge to allow them to reach their full potential.

Further, we seek that Pakistan's girls are aware that their rights are human rights and that they have equal rights to boys and men; that they have life skills to understand that they can and should have agency over their mental, emotional, and physical being. We aim for girls to have voice, agency, and space to express themselves where it is heard, sought, and valued.

**Aleena Khan & Muhammad Hammad Younas**  
Department of Management Studies  
(BBS)<sup>1</sup> Bahria University Islamabad Campus

# THE HIDDEN HARASSMENT

## Workplace Incivility

Employees are the most valuable resource for any organization and are the key to success. They are considered as an asset and backbone of an organization. One needs to be aware of the needs of the employees to make them happier, motivated, and productive as they are the best source for providing crucial customer insight. If companies want to have a good relationship with customers, they first need to develop an excellent relationship with employees. This is only possible when organizations take good care of employees from every perspective. To provide a healthy environment, organizations always focus on the protection from different types of harassment i.e. sexual, discrimination, personal, religious, age etc of their employees.

Moreover, organizations create policies to implement and penalties to those who violate. However, there is one of the most important hidden harassment which is extremely damaging but no one talks about it in the organizations. Yes, it's workplace incivility. Now the question is, what workplace incivility is? In the year 1999, Lynne Andersson and Christine Pearson paved a way for workplace incivility by defining as "low-intensity deviant behavior with ambiguous intent to harm the target, in violation of workplace norms for mutual respect. Uncivil behaviors are characteristically rude and discourteous, displaying a lack of regard for others". This destructive factor is not only confined to employers but also subordinates. Every developed and developing country is facing incivility at the workplace and unfortunately, the rate is higher than before.

According to the studies, Christine Porath and Christine Pearson found out that 98% of people experienced uncivilized behavior in organizations. They composed data of 800 supervisors and workforces in 17 industries and found the price of incivility at the workplace as:

- 1) 48% purposely reduced their work effort.
- 2) 47% deliberately decreased the time spent at work.
- 3) 38% purposefully lower down their work quality.
- 4) 80% wasting half of the work time in worrying about the incidents and thinking how to deal with it
- 5) 63% lost work time avoiding the instigator.
- 6) 66% said that their performance dropped.
- 7) 78% said that their commitment to the organization declined.
- 8) 12% said that they left their job because of the discourteous treatment.
- 9) 25% confessed to taking their frustration out on customers



Incivility at the workplace is contagious, if it's not stopped it ruins the organization. According to the different studies, most people don't dare to discuss these issues, and the people who discuss it with higher authorities normally get ignored. It is like a silent epidemic. What makes incivility insidious in particular is because when someone faces sexual harassment, they can easily complain about that as policies do exist to protect employees. But when people talk about incivility, unfortunately, there are no formal laws or policies governing this issue so no one takes action, and ultimately the matter is shunned. For a healthy environment, organizations need to understand the harm which is incurred from the prevalence of incivility at the workplace and take corrective measures effectively. Organizations need to create a culture where incivility should be eliminated. According to different studies, Pakistan is also facing the above mentioned hidden harassment in organizations.

**Ramsha Arshad**

Sr. Lecturer

Department of Management Sciences  
Bahria University Lahore Campus

# 11. EARTHINGS



## GIS TECHNOLOGY IS AN EMERGING TREND IN APPLIED RESEARCH

Geographic Information Science (GIS) provides a powerful tool in mapping and modelling of spatial data sets. The spatial data sets are a necessary component of various research projects in multi-dimensional fields such as Physical Sciences, Social Sciences, Management Sciences, Earth Sciences, Hydrogeology, Environmental Sciences, Coastal and Marine Studies. The last couple of decades have seen immense developments in spatial data analysis and GIS utilization in applied research. The researchers utilized emerging technologies such as GIS, Artificial Intelligence, and Satellite Remote Sensing approaches in their projects to enable them to look into innovative dimensions of conventional databases.

The GIS mapping and modelling plays a vital role in scientific research, with a broad array of applications for spatial data analysis and easy-to-interpret visualizations.

GIS helps to gather spatial data, manage, analyze, manipulate, and visualize the geographical model of the data which can reveal fascinating details about our world entities. It is a fact that geospatial reasoning is increasingly vital to growing our understanding of earth science and pursuing new avenues of inquiry and learning. GIS organizes geographic data so that a person reading a map can select data necessary information for a specific project or task.

A thematic map has a table of contents that allows the reader to add layers of information to a basemap of real-world locations. Laboratories and field trips provide hands-on experience with collection, mapping and analysis of geologic and other field data using Global Positioning System (GPS) equipment and GIS software. The global positioning system that provides geographical coordinate (latitude and longitude) to any spatial feature such as a pump station etc.

Geologists investigate the dynamic interior of Earth, planet's structure, composition of rocks, changes in natural resources over time, etc. However, it's not always practical for scientists to visit a location for field observation. The application of satellite based imaging remote sensing in geology means scientists can use electromagnetic radiation to collect detailed information from all over the world. Interpreting and visualizing the data that comes from those remote sensors are among the primary uses of GIS for geologists. GIS experts map out features of the earth's surface and offer guidance for natural resource management. Spatial reasoning is particularly valuable in the mining industry, where mineral exploration using remote sensing and GIS leads to effective prospecting.

Organizations identify the probable locations of deposits by mapping surface features and performing spectral analysis in search of mineral resources in complex geological environments. Extensive data and the ability to leverage spatial thinking skills allow leaders to operate efficiently and make informed decisions about where to drill. We have utilized the GIS mapping and Image Processing tools to identify the mineral resources in the ophiolitic belt of Balochistan.

Geospatial techniques are mediating in decision making, diversified data management and critical analysis. *Jatropha Curcas* is a biodiesel crop and friendly to the regions of saline water environment. In one of the project, we have investigated the land suitability for plantation of biodiesel plants by using meteorological parameters and satellite imageries of ASTER GDEM and Landsat 8. Thematic layers of soil adjacent to existing vegetation, topographical elevation, slope, land surface temperature, and humidity were created and analysed with spatial distribution of various soils types, bareness index and stream orders Karachi. GIS-based mapping supported with validity checks with ground surveys give us confidence to expand the scope of this study which may contribute to maintaining heat-sink for the industrialized cities.

Mapping and modelling weather and climate with GIS yields valuable insights for meteorologists as they study the processes at work in the atmosphere. Scientists can pinpoint the locations of weather events and analyze how weather systems move over time. Identifying meaningful patterns and trends in GIS weather data leads to more accurate predictions.

With detailed spatial information, it's possible to model subsurface water flow or assess the stability of terrain for oil and gas exploration. We have used the interpolation techniques to identify the spatial distribution of best reservoir characteristics of Lower Goru Formation in various Petroleum concession blocks such as Kadanwari, Sanghar and Sawan, Sindh.

Employing GIS for environmental applications ensures these scientists have the spatial information. The role of satellite remote sensing in climate change studies

can be even more crucial. Applying GIS in climate change research brings attention to phenomena like: Spatial patterns in rising sea levels, Changes in vegetation within specific regions, Dwindling sea ice and glaciers. We have studied the Spatial Distribution of Carbon Monoxide in Karachi and identified the hot-spots. Further, in another project, we have studied the morphological changes in the Indus river bank over the last three decades.

The vastness of oceans invite the scientists to study the wide ranging variety of coastal and marine ecosystems. In one of our projects, we have used the Landsat imageries to study the Land use and Land Cover changes in front of Karachi Coast. The results helped us to identify the impact of coastal erosion and anthropogenic activities on the coastal environment of Karachi. The Integrated data base of Oceans includes bathymetry, surface and subsurface feature names, and derived depths. The Ocean Basemaps were designed to be used as a basemap by marine GIS professionals in future studies. GIS professionals note important factors like surface temperature and roughness, salinity levels and wave height. These readings, in turn, can warn organizations of hazards developing along the coastline and guide ships through the safest routes.

Recent earthquake related studies are conducted to model seismicity in southern Pakistan. Southern Pakistan is sensitive and seismologically active due to seismic sources spread over Sindh, Balochistan, and frontal offshore areas of the Arabian Sea. Thereby, major earthquake-prone sources are active Makran subduction zone, transform boundary along Murray ridge and Chaman-Ornach-Nal fault system. During my PhD thesis research work, I have utilized GIS based mapping tools to allure the earthquake data analysis and seismicity yield of active fault lines in southern Pakistan.



The intraplate seismicity is observed in various clusters of shallow to deep focal depths, reflecting the seismically active zones of respective plate margins. Critical analysis of focal depths unveiled some anomalous deep focal depths for several intraplate earthquakes located in the southern Sindh region. A rigorous effort is made to study the earthquake potential of individual fault lineaments by considering earthquake characteristics and allied data sets, GPS constraints across faultly blocks, slip-sense during major events etc. The seismicity characteristics of fault lines are used to ascribe 'seismicity index' that helped to rank potential faults from I (least active) to V (highly active), first time in southern Pakistan. Further, emergency personnel use GIS to help manage the impact of earthquakes and other disasters by assessing risk and hazard locations in relation to populations, property, and natural resources, integrating data of earthquake and damageability, prioritizing search and rescue.

Thus, it is concluded that with an ability to integrate a variety of spatial datasets in a number of ways, GIS is a useful tool for nearly every field of knowledge from psychology to seismology.



**Muhammad Jahangir Khan**  
Assistant Professor  
Department of Earth & Environmental Sciences  
(BSEAS)<sup>3</sup> Bahria University Karachi Campus

## 12. COMPARATIVE NARRATIVE



### RIGHTS BASED APPROACH

#### Can Development In Practice Make Development Less Bureaucratic And More Reflexive and Empowering?

In this research essay it is argued that how rights based approach to development can make development less bureaucratic and more reflexive and empowering. Usually development is done in a bureaucratic framework; development is done following a manual consisting of certain norms and guidelines. However, in recent years, rights based approach to development has become increasingly popular among development agencies and practitioners. The right based approach to development has represented a paradigm shift from bureaucratic style of development towards more empowering and reflexive forms of development.

The bureaucratic arena is composed of all state organizations involved not only in formulating and implementing policies but also delivering services. Bureaucratic development organizations are organized in a hierarchical order with a chain of command flowing downwards and directives flowing upwards (Hyden, Court, & Mease, 2003). However it has been argued that sometimes bureaucrats only represent their own interests and the source of power is concentrated in few hands. Unique positions of power and authority are held by bureaucrats, the abuse of which can cause long lasting and significant damages to socio-economic

development (Blackburn, Bose, & Haque, 2004). In recent years, there have been increasing talks about rights based approach to development among development actors and organizations. There is a wide range of rights based approaches to development with different starting points and different implications for development.

According to the overseas development institute the main emphasis of rights based approach to development has been on achieving human rights as an objective of development, considering thinking about human rights as the scaffolding of development policy and evoking the international framework of human rights accountability in support of development actions. This is not only concerned with sustenance including economic and social rights but also freedom consisting of civil and political rights (INSTITUTE, 1999). Rights based approach to development is relatively a new global development perspective not only ensuring the provision of basic human rights but also providing a series of approaches through which the governments can build fairer, equitable and empowered communities (Amnesty International). According to UNDP an important element of rights

based approach to development is empowerment. Under rights based approach, development policies and practices are embodied in a system of rights and obligations which helps in promoting the sustainability of development activities and empowering the people themselves especially those who are excluded and most marginalized to participate in the process of policy formulation and holding those people accountable who have a duty to act (Benest). According to the research and development group (2008), the strategic orientation of RBA is that it analyzes the structural causes of problems and issues. Rights based approach to development identifies powerlessness to be the main cause of poverty and marginalization and central to the concept of poverty and marginalization are inadequate access to education and information. If people are unaware of their fundamental human rights they cannot effectively proclaim them. Rights based approach to development empowers marginalized sections of a community. Empowerment refers to the extent to which the people are aware of their human rights and how to effectively claim them through a legalized manner. It encompasses access to information, access to decision making process and the access to demand human rights. RBA ensures that development policies and programmes are based on empowerment, ensuring that people not only have access to power but also providing them access to better their lives and overall welfare of the community. Also a significant feature of right based approach is that it re-conceptualizes the relation between parties in a contract. In fact, RBA establishes claims and focuses on the relationship between right holders and duty bearers. This means responding to the claims laid by the right bearers as opposed to charitable ventures.

Among other principles of rights based approach are accountability, participation, non-discrimination, alienation to the vulnerable groups, however, empowerment seems to be the core principle of right based approach because anyone can choose to participate in processes that affect their rights but only if they are empowered to do so. For example, Ireland places a great emphasis on education. Examples of positive empowerment in terms of rights based approach are children's parliament, Dáil na nÓg, the rise of growth in student-school councils and programmes such as 'young social innovators' etc (Amnesty International) Right based approach to development has made development less bureaucratic, more reflexive, unplanned and not predetermined. Rights based approach to development has accounted for making development more reflexive rather promoting bureaucratic practices of development. Reflexive development involves not only recognizing authority over but also responsibility for personal and professional values and actions.

Rights based approach to development has significantly promoted reflexive development as it focuses on the considerable disagreement over lack of diversity and unequal distribution of power. Accountability, participation, openness and transparency are the driving factors of rights based approach making development more reflexive. Reflexive development involves thinking from within the experiences and bringing forward innovative methods of development that are undetermined, unpredictable and unplanned. It empowers the individuals to understand power structures, institutional processes and why certain groups are marginalized and excluded from the mainstream community. Rights based approach provides us with the ability to shape our surroundings and take circumstances into consideration that will ultimately enable us to prosper and become better off. Thus at the heart of a right based approach to development is an incentive to reflexively engage with the issue of power (Cornwall & Nyamu-Musembi, 2004).

Recently local governments have become important players in promoting economic, social and political reforms. 80 percent of the developing and transitioning countries are undergoing decentralization and local governments have become the suppliers of a wide range of services. Human rights activists focus on centralized government institutions. However, administrative reformists have focused on decentralization. The interactions and linkages between human rights, development and local democracy are the central theme of a rights based approach to development. For example: Panchayati Raj institutions are rural local governments in India based on the principles of right based approach to development. According to the legal framework of Panchayati Raj Institution, participation is a right, empowering the citizens in key decision making processes that enacts policies on the distribution of economic and social resources. PRI has also been used as a mechanism for changing power structures in favor of the excluded and marginalized groups.

Thus, seen from this perspective the Panchayati Raj institutions refer explicitly to the rights based approach to development (Kapoor, 2008). The rights based legal empowerment strategies include promoting ownership which means that the issues and their solutions must be based on the needs and preferences of the poor and disadvantaged groups. It also involves discouraging pre-determined top down focus on institutions which in turn leads to articulation (standing up) and taking charge (acting up), focusing on rights rather than sectors. Recognizing the local people as the key actors in their own development and less reliance on western models constitutes another strategy. However, the most important strategy is to sustain best practices. This involves promoting local ownership, monitoring both outcomes and processes, involving all the stakeholders in development, devising strategies that are empowering rather disempowering and using both top down and bottom up approaches in synergy (Cebrenros).

The right based approach to development has made development less bureaucratic and more empowering and reflexive. Bureaucratic development represents all the state organizations formulating and implementing policies to deliver services with hierarchical chain of command. On the other hand, the main emphasis of RBA is on achieving human rights as an objective of development and considering human rights as the fundamentals of development policies. It covers domains of economic, social, political and civil rights to build fairer, equitable and empowered communities. Development policies and practices are embodied in a system of rights and obligations to promote sustainable development involving the marginalized and excluded segments in decision making. RBA analyzes structural causes of problems and issues and considers powerlessness as the root cause of poverty, exclusion and marginalization. Core principles of RBA are empowerment, accountability, participation, non-discrimination and alienation to the vulnerable groups, however empowerment being the core principle. These principles have resulted in making development more reflexive involving thinking from experiences and applying innovative methods which are not pre planned and pre-determined.

**Abdullah Bin Kamal**  
Student Advisor & Program Coordinator Public Health  
Department of Humanities & Social Sciences  
(BH3S)<sup>2</sup> Bahria University Islamabad Campus

## ANGLO-SAXON LITERATURE

The Anglo-Saxon invaders, who came to Britain in the latter part of the 5<sup>th</sup> century A.D, were the founders of what we can properly call English culture and English Literature. They gave England its name, its language and established its links with 'Germania', the great body of Teutonic people.

The literature produced by England during the Middle Ages falls into two clear divisions.

- 1) *Anglo Saxon Literature*
- 2) *Middle English Literature from about 1100 onwards.*

Anglo-Saxon language and Literature are distinctly different from Middle English Language and Literature. The language came heavily under the French influence after the Norman Conquest though the conquest alone does not quite explain the extent of the French Influence. France led in ideas and opinions and in matters of literary taste and form throughout Western Europe after the year 1100. Thus, while Anglo-Saxon literature is merely the expression and outlook of a tribe, the poetry of Chaucer is distinctly European in character. By the time we came to Chaucer, three powerful currents were clearly discernible in English Literature. There were three strands of influence on Anglo-Saxon Literature.

- 1) *The race element- Anglo-Saxon language and literature*
- 2) *The system of Education developed by the Latin Church*
- 3) *The tradition of Greco-Roman culture coming down in a thin stream to the Middle Ages.*

The Anglo-Saxon Literature which brings us most closely into contact with the Germanic origins of the invaders is the heroic poetry. This is written in the language known as Old English or Anglo-Saxon. The verse is alliterative and stressed, without rhyme, each line containing four stressed syllables, definite pause (Caesura) between the two halves of each line. Anglo-Saxon poetry taken as a whole, is a continuous piece of edification, and its dominant tone is elegiac.

### Anglo-Saxon Poetry:

The Germanic tribes which emigrated to England brought some native poetry with them. One of the earliest surviving narrative poems in Anglo-Saxon is 'WIDSITH'. The poem is homogeneous but rambling and disorganized. A far-wandering poet describes the Court of Kings in the poem as seen by him. It is a kind of fantasia designed to produce a description of Teutonic Kings and Kingdoms. The poem is a clear indication of the fact that the Germanic tribes loosely knit as they were often felt to be a single united race.



However, the core of the work finely reflects the heroic attitude and gives us a fascinating glimpse of the Germanic world as it appeared to the imagination of the Anglo-Saxons. The poem dates from the late 7<sup>th</sup> or early 8<sup>th</sup> century, though parts of it must be older than that. As mentioned earlier, Widsith, the 'far-wanderer', tells us of his travels throughout the Germanic world and mentions the many rulers he has visited. The Princess claims to have visited virtually the whole Germanic world and their lifetime's extend over two hundred years. This poem shows a process of amalgamation of the different racial elements, and we are reminded that the heroes of that poetry were not regional or national but common to all Germania. The Anglo-Saxons regarded foreign heroes as their own and was an example of the subconscious desire to bring together different elements, external as well as indigenous.

One of the most important Old English poems or epics 'BEOWULF' holds a special position in Anglo-Saxon Literature because it is the only complete extant epic of its kind in an ancient Germanic language. Nowhere else is a traditional theme handled in a long narrative poem against a background which reveals to us the culture and society of the Heroic age of the Germanic people. The poem is remarkably successful in rendering that combination of heroic idealism and sombre fatalism which seems to have been part of the Germanic temper. However, it is structurally weak and provides insufficient unity of tone or organization to hold together effectively the two central episodes and the many digressions which make up the whole. It is generally believed to be the work of a single author writing in the first half of the 8<sup>th</sup> century.

There is an obstinate idealism and it depicts a king's court in which nothing is heard but noble sentiments and counsels of modesty and wisdom. The theme is monotonous and slightly childish. A sombre imagination and the sadness of a northern landscape paint powerful pictures. Even in the midst of fierce battle and the hero's victory is perceptible.

Beowulf falls into two main parts. The first deals with the visit of Beowulf (a Swede) to the court of king Hrothgar, the King of Danes (Denmark), who had been plagued by a man-eating monster, Grendel. The second part takes place fifty years later, when Beowulf has long been the king of the Geats. In order to save his country from the dragon, he undertakes to fight it and though he slays it, he is himself mortally wounded in the struggle. The poem ends with an account of Beowulf's funeral. As a story of adventure, Beowulf is commonplace and uninteresting for sophisticated readers. But it is a long narrative poem and contains a full and detailed picture of life of the good society of the time. Courage, loyalty, respect for ladies are the notable elements of the poem and proclaims its noble character. A poem noble and serious; of a truly epic in character it certainly is, though its author fails to give it a properly tragic character.

There are a few elegiac and lyrical pieces in Anglo-Saxon such as 'Lament of the Dear', 'The Sea-Farer', 'The Wife's Complaint', 'The Ruined City' etc. Most of these are laments. These poems can hardly be called Christian, except here and there, chiefly in the conclusion. Such for instance are 'The Ruined City', which mourns the vanished glory of a ruined city, 'The Wife's Complaint', in which a young wife mourns her separation from her beloved, 'The Sea-Farer' is about a sailor recalling in a reverie all the trials and sufferings he has had to endure at the hands of the sea, and 'The Lament of Dear' is about a poet who has been removed from service by his lord. The most original of these is 'The Sea-Farer', which is a picture of the dark northern sea where the tormenting cold is added to the turmoil of waves and winds. The remarkable thing in these poems is the atmosphere of melancholy, regret, and a sense of doom. It is a mood that we identify with the Teutonic race as a whole and is to be found in its epic as well as its lyrical productions. In a sense, this is the distinctive mark of the race.

The poems discussed above are pagan in character, though touched by a Christian spirit here and there. Christianity was introduced into Kent by Augustine in 597 A.D. and then it spread into Northumbria throughout the 8<sup>th</sup> century. The finest of the Christian poets is Caedmon (c.675) who turned into a poet later in life. Bede, the great English ecclesiastical historian and scholar who lived from 673 to 735, tells in his "Ecclesiastical history of the English people" that he turned many paragraphs of the Scripture into verse for the edification of Christian people. None of it has, however, survived except the nine line quoted by Bede in Latin. Caedmon's example led to many Bible poems such as Genesis and Exodus (authority unknown).



The 'Fall of the Angels' and 'The Dream of the Road' by unknown authors are two of the finest Anglo-Saxon poems in Christian themes. 'The Fall of the Angels' is rightly compared with Milton's Paradise Lost, for the poem makes its invention in the story instead of offering a faithful representation of the Biblical originals, and in doing so approximates close to the plot of 'Paradise Lost'.

In 'The Dream of the Road', the poet invents the highly imaginative device of making the cross tell the story of the Crucifixion in a spirit of devotion and pity. The poem is better than many passion plays.

Cynwulf was an old English poet who signed his name in runic letters to a number of poems in West-Saxon. He is the author of four poems, which show self-conscious craftsmanship. Nobody knows for certain whether Cynwulf had any actual historical existence. If he did exist, then he is the author of four very artificial poems – 'Christ', 'Elem', 'Juliana' and 'The Fate of the Apostles.' These poems contain his signature in runes. His love of ornamentation is so great that he is often in the danger of forgetting to develop his main theme.

Toward the end of the Anglo-Saxon period, the old heroic note, so long unheard, re-emerges finely in two poems dealing with contemporary history. 'The Battle of Brunanburh' appears in 937 and celebrates the victory of the people of Wessex against the Norse, the Scots, and the Welsh. In the older heroic poetry, emphasis was laid on the individual hero, and his national origins were of little importance. He claimed the admiration of all the Germanic people without any national prejudice. 'The Battle of Brunanburh' shows the development of a strong patriotic sentiment.

Very late in the Anglo-Saxon period, the heroic spirit suddenly flares up with a great brilliance in 'The Battle of Maldon' or Byrthnoth appears in 991 A.D. It is a poem on an English theme. It tells of the great battle fought between the Saxon and the Danes on the Essex Coast in 937 A.D, in which the Saxons were defeated and Byrthnoth, the alderman of East Anglia was slain. Courage swells to a heroic pitch as defeat appears certain. The Maldon poem is the most satisfactory of all the heroic poems produced by the Anglo-Saxons.



## Literature Of The Middle Ages:

Then comes the Middle English literature from the 14 century to 1470's. The Norman Conquest in 1066 imposed a French speaking ruling caste on England, with the result that Anglo-French developed as the literary language of the highest social classes and Anglo-Saxon was for a period relegated to the lower classes. By the beginning of the 14<sup>th</sup> century, English had re-established itself as the language of the literature of England.

In English poetry, the rhymed verse of the French soon replaced the Anglo-Saxon alliterative tradition. However, there was a remarkable revival of alliterative verse in the 14<sup>th</sup> century. This was the period of French cultural domination in Europe. The old heroic note was dying away throughout Europe, because the new Europe of the Middle Ages was not a heroic society but a feudal society. It had its own conventions of service, honour, obligation, and relation between the sexes.

This was an age largely dominated by the Church and it had controlled over the universities and the feudal upper classes. However, the Church was unable to curb all the energy generated by the younger feudal lords. The feudal lords developed and became sovereign powers and were very tenacious of their rights. The intellect aristocracy was anxious to distinguish itself from the manner of the subjects. They developed an artificial manner to distinguish itself. This was a society governed by a universal code of chivalry.

The idea of courtly love proved to be one of the most far-reaching and revolutionary in the history of European sensibility. A new concept of love appeared and love is service like that of a slave to his master. The knight serves the lady of his choice. The slightest favours the lady chooses to bestow upon his servant is sufficient reward for the greatest lordship he may undergo for her sake. He is his humble vassal and she is his liege lady. The rules of Knightly behaviour were carefully defined and involved many subtle points of conduct. By these rules every lover was bound. There were 'courts of love' which adjudicated on subtle points of honour and the proper conduct in love affairs.

The French bourgeoisie was gaining strength and they found an ally in the university graduate who stood

against the ecclesiastical order and the feudal aristocracy. There were tensions created by these interactions and 'The Romance of the Rose' is a single poem that reflects these undercurrents.

There were two kinds of poets that rose in France, that is the troubadours and the trouveres. The troubadours belonged to the South of France and their poems had elements of sentiments and courtly love. The trouveres writings were the narrative romance of action unaffected by the courtly love and sentimental ideals of provenance. They were professional ministers who went around entertaining in the halls of the great houses.

One of the most striking differences between Middle English and Anglo Saxon Literature lies in the realm of verse narrative. Heroic poetry is sterner in mood, more realistic in treatment, and claims to deal with the exploits of heroes who had some place in history.

Fighting in heroic poetry is a grim affair, engaged in for some specific purpose. Even the most valiant hero is liable to lose if he fights against heavy odds. In the romance, characters fight on principle, or as a matter of fashion often without any specific object. The outcome depends more on the character of the fighter than on the odds against which he is fighting. The whole thing is done ritualistically, as a stylized sport rather than a desperate necessity.

## Romances:

These caught the imagination of the writers of that day. They depict a world of make-believe and imagination, and took the audience away from harsh realities. The plots and events were indifferent to logic and there is no cause and effect. Romantic allegories are rudiments upon which the literature of all nations are built.

The late 12<sup>th</sup> century Jean Bodel divided the subject matter of medieval romances into three categories. There were three main sources of Middle English Literature-religious, courtly love, Arthurian. There were three main sources of romances in the Middle Ages as French poet Jean Bodel put it:

- 1) *The matter of France*
- 2) *The matter of Britain*
- 3) *The matter of Rome the Great*

The matter of France concerned Charlemagne and his knights, and this was earliest to be developed. The matter of Rome, this represented the ancient classical world as seen through medieval eyes. The stories of Thebes, Troy, and King Alexander and the Great Julius Caesar make up the subject matter. The matter of Britain is concerned with the story of King Arthur and his knights. These stories may well have been handed down in Wales to be carried to Brittany by Welshmen who emigrated there in the 9<sup>th</sup> century. They had lost the old heroic note completely and treated it with extra-ordinary elaboration of the practice and ideals of courtly love.

It is curious how the Normans and the Saxons both accepted King Arthur as a national hero. Such acceptance must have gone a long way in integrating the different races in Britain. It is probable that the Normans had come across the Celtic stories of Arthur and his knights, even before the Conquest. It appears that the Arthurian romances compelled the imagination of the Norman poets more than the matter of France and Rome the Great.

The Normans brought with them the gift of romance to England. For two hundred years after the Conquest, the official language of England remained French. The romances of this period were written in Norman-French. Wace, a Norman poet, put Geoffrey Monmouth's Latin history of Britain into Norman-French verse which in turn was translated by Layamon (an English poet of the late 12<sup>th</sup> century) in Saxon alliterative verse in *Brut* (1205). Wace's poems are poor in point of art, but Layamon is a poet. Layamon made many additions in the poem not to be found in Wace. Ultimately, it was this poem which became influential as a source of Arthurian romances. Both Malory's and Tennyson's *Morte D' Arthur* are based on Layamon's account of the passing of Arthur.

No English poet can rival a French poet in writing about fine manners. But English poets did write romances. 'King Horn' and 'Havelock the Dane' are based on English traditions coming down from the time of the Danish war. The matter of these stories, however, was not strictly speaking the matter of Britain, at least not as French poets understood 'the matter of Britain' (Arthur's stories). *Sir Tristram and Sir Orfero* were edited by Sir Walter Scott from the famous *Auchinlock* manuscript in Edinburgh. While *Sir Orfero* is a typical example of a British lay i.e. the short French romantic story, *Sir Tristram* does not seek to imitate any kind of French style. It invents a peculiar stanza of its own to narrate the story. The other romances are *Ywain and Gawain*, *king Alysandar*, *Arthur Merlin*, etc. Most of these romances are written in the syllabic measure learnt from French, though the emphasis still falls on accent rather than the number of syllables. Some of these romances (the ones mentioned above) can be dated before the 14<sup>th</sup> century.

One of the most original of romances on the Arthurian theme is 'Sir Gawain and the Green Knight' written in alliterative verse. The *Pearl*, *Purity*, *Patience*, and *Sir Gawain and the Green Knight*, all four in alliterative verse were found in a single manuscript which is why it is thought that all the four poems were written by the same author. The story has some modern elements in spite of the element of the marvellous in it. It is an extremely well-written poem with lively scenes. The knight Gawain is the mirror of courtesy- his politeness and his desire to remain pure is very well rendered.

Realism and vigour mark the description of the deer-hunt, the boar-hunt, and the fox-hunt. A strong feeling for nature is characteristically present in the poem. The description of snow, rugged mountains, and hills covered with mist is very impressive.

An Anglo-Saxon mist surrounds this Celtic story. The author Gawain is as essential a poet as Chaucer, but in language and verse it looks backwards. The verse learnt from French would eventually triumph. The poet of Courtly manners who would be the equal of the best French courtly poet was still to come.

## Courtly Love And The Romance Of The Rose:

The Church was the central power in the early Middle Ages. It exercised the power of control over the university as well as the feudal upper class. It soon became difficult, however, for the Church to contain the intellectual energies released by the new institution of the university or the spirit of local independence which was inherent in the feudal system.

The feudal system gradually developed in a large way. In the absence of a central authority, it became almost a sovereign power within its own district and was tenacious of its rights. The seat of this society was the Castle and the intellectual aristocracy anxious to distinguish themselves from the manners of their subject evolved a complete code of artificial manners and sentiments which finds expressions in the poetry of troubadours. The Provençal feeling was not a spontaneous outbreak. It is rooted in the institution and customs of the time. The definition of the knightly conduct in war is only one aspect of an elaborate code which had very wide social implications.



Apart from the universal laws of chivalry, the knight had to go to school at the courts of love to learn how to conduct himself in refined society. The Courts of Love which can be traced back to the middle of the 12th century were modelled on the courts of the feudal lords where they administered justice. These courts were presided over by famous ladies among whom were Marce, Countess of Champagne, and Eleanor Aquitaine etc. The laws of 'Love' administered in them were simply the rules of pleasing- showing oneself amiable-in feminine society, the standard being determined by a code of 31 articles, which were fabled to have been attached to a ring on the neck of a falcon, found by a knight of the Court of King Arthur. "These define with great precision and delicacy of observation the signs of true love, and what may be required of a lover.

Whatever a doubtful case arose, it was referred to one of the presidents of the Courts of Love, who decided the point of equity by reference to the statutes with a remarkable nicety of logic." These cases were collected by Andre de Chaplain in *De Amone*, a scientific treatise on love. In each case, the male speaker begins by explaining to his mistress why she must hear him out, while the lady, "an expert logician, meets him with objections which must be removed inch by inch before she will yield."

According to Court hope the chivalrous society of the 13th century treated love as a kind of liberal education, and "the art of poetry as practiced by the Proven Gods, lay in the elaboration of a particular sentiment and language, which served to separate the manners of a ruling caste from those of an unsophisticated crowd. The fashion of chivalry reached its height during the Crusades and having found its poetical expression in the exalted though artificial songs of the troubadours, crystallized, as we shall presently see, into an allegorical and didactic style."

The French bourgeoisie was, however, also gaining strength and it found a strong ally in the university scholar who sometimes stood against the ecclesiastical order and sometimes against the feudal aristocracy. This party found its characteristic literary expression in the rude and fablian (short fables) of the trouveres. The opposition between the feudal and democratic principles finds a curious and striking expression in a single French poem 'Romance of the Rose' an opposition which divided the mind of French in the 13th century. "And not France alone, wherever the institution of feudalism was established, the shock communicated by this poem was felt, so that whoever wishes to understand the spirit of the great majority of poems written in England between the reign of Edward III and Henry VIII must first make acquaintance of the 'Romance of the Rose.'

**Afshan Saleem**  
Asst. Prof, Cluster Head  
Coordinator BS-English, HSS  
(BH3S)<sup>2</sup> Bahria University Karachi Campus

# 13. BRACE THE DIAGNOSIS

## DIABETES AND ITS IMPACT ON EYE HEALTH

### Abstract

Diabetes mellitus (DM) is a metabolic disease defined by elevated blood glucose (BG). DM is a global epidemic and the prevalence is anticipated to continue to increase. The ocular complications of DM negatively impact the quality of life and carry an extremely high economic burden. While systemic control of BG can slow the ocular complications they cannot stop them, especially if clinical symptoms are already present.

DR is a progressive blinding disease that affects 4.2 million people worldwide, making it a leading cause of blindness; and, this number is expected to continue to increase. DR can be divided into two types, nonproliferative DR (NPDR) and proliferative DR (PDR). NPDR can be further divided into three stages before progressing to PDR. An important difference between NPDR and PDR is that vision is not compromised with NPDR, whereas PDR is vision threatening. While NPDR almost always progresses to PDR, the progression can be delayed with tight blood glucose control.

It is estimated that the prevalence of diagnosed and undiagnosed DM cases are about 10 % of the Pakistan population. The public health burden of DM is largely attributed to the fact that hyperglycemia increases the likelihood of both macrovascular and microvascular complications; that result in the increase in morbidity and mortality associated with all forms of DM. When not properly managed, long-term complications can be severe and include heart disease, stroke, and kidney failure and importantly, diabetes also profoundly

impacts the ocular tissue, with damage to this organ occurring even at the early stages of the disease. While the most prominent manifestation of impaired macrovascular function in DM is accelerated atherosclerosis, microvascular dysfunction leads to nephropathy and retinopathy. Among the microvascular complications of diabetes, diabetic retinopathy (DR) is the most common and is the leading cause of blindness among working-age adults in Westernized societies. The changes in the microvasculature result in increased vascular permeability and ischemia. The most profound effects of these alterations are seen in the retina of the eye.

The cause of T1DM (insulin dependent) is uncertain and it is not preventable, while T2DM (non-insulin) is almost always preventable via behavioral approaches such as diet, exercise, and weight control. Even when well controlled, diabetes has a profound adverse effect on the ocular tissues, Although most common, DR is not the only ocular complication of diabetes; others include corneal dysfunction, cataract, glaucoma, neuropathy, ischemic optic neuropathy, and diabetic macular edema (DME). The greatest risk of developing DR is duration of diabetes, poor glycaemic control and associated comorbidities like hypertension.

It is very important DR Caught early by examining the patient and treated so as to prevent the complications of the disease.

## Ocular Complications Associated With Diabetes

### Diabetic Retinopathy (DR)

The etiology of DR is complex and not completely understood. However, the mechanisms likely involve vascular, neuronal, and immunological systems. The visual cycle puts a high metabolic demand on the retina, which has two sources of vascular supply. Retinal arteriole vessels supply 2/3 of the inner retina, while the choroid supplies the retinal pigmented epithelial cells and the outer 1/3 of the retina. One of the earliest changes that occur in DR is a reduction in retinal perfusion. This suggests that every patient of diabetes must undergo funduscopy initially annually and then biannually.

These microvascular changes are not always apparent to the patient but are visible on a fundus examination. The reduced blood supply triggers a series of adverse metabolic reactions that ultimately result in endothelial cell degeneration of the retina. The result is retinal ischemia, increased compensatory angiogenesis, tissue remodeling, and inflammation characterized by increased expression of VEGF, IL-6, IL-1 $\beta$ , and TNF- $\alpha$ . Retinal vessels are particularly susceptible to the microvascular changes that are associated with hyperglycemia. Once this pathological cycle begins, controlling blood glucose has little or no effect on the ocular diabetic complications. That is largely due to a cascade of inflammatory and angiogenic factors that no longer respond to well controlled blood glucose levels.

### Non Proliferative Diabetic Retinopathy (NPDR)

The first stage of NPDR is mild NPDR in which microvascular changes manifest as microaneurysms that are visible on the retina. NPDR is classified as moderate when intraretinal hemorrhages, hard exudates, cotton wool spots, and venous beading in two or less quadrants are visible on the retina. The intraretinal hemorrhages usually clear up in two to three weeks and so do not interfere with vision long-term. Severe NPDR occurs as the duration of disease continues, the intraretinal hemorrhages increase to include all four quadrants, venous beading increases to include more than two quadrants, and/or one intraretinal microvascular abnormality is visible.

### Proliferative Diabetic Retinopathy (PDR)

As the disease progresses the real threat to vision occurs when new blood vessels develop as a consequence of angiogenesis, which in turn occurs due to ischaemia. These new blood vessels are fragile and liable to rupture leading bleeding into the retina and vitreous. .

Vascular Endothelial growth factor (VEGF) is a crucial mediator in microvascular complications of DM. Normally, numerous retinal cells such as retinal pigment epithelial (RPE) cells, Muller cells, and pericytes, produce VEGF. When a hypoxia occurs VEGF is secreted much more than normal production by hypoxic retinal tissues. Clinical studies have reported that there is a strong correlation between DR and intraocular VEGF concentrations. Intravitreal and intracameral VEGF levels were prominently increased in patients with proliferative diabetic retinopathy (PDR). Additionally, VEGF has a crucial role in the pathogenesis of diabetic macular edema (DME) by increasing vascular permeability.

### Diabetic Macular Edema (DME)

The macula is located in the center of the retina and contains the highest concentration of cones. This gives the ability to see color and details. Because of the central location of the macula, it also means the macula is responsible for central vision. When the fragile retinal vessels burst, the fluid accumulates causing a thickening of the retina. This results in distorted or blurry vision. It has been observed that the incidence of DME is higher among type 2 compared to type 1 diabetics.

### Neuropathy

Diabetes causes stress to the retina that triggers apoptosis of retinal ganglion cells (RGCs). This results in ischaemic optic neuropathy. The damage can also affect cranial nerve 3,4 and 6 leading to paralytic strabismus

### Cataract

Early development of Cataract is one of the main causes of vision impairment in diabetics.

### Management

Diabetic Retinopathy if early can be managed by ocular investigation like optical coherence tomography (OCT) and fundus fluorescein angiography (FFA) and use of ANTI VEGF (AVASTIN EYELEA) injections which are given intravitreally and Argon laser photocoagulation to Retina

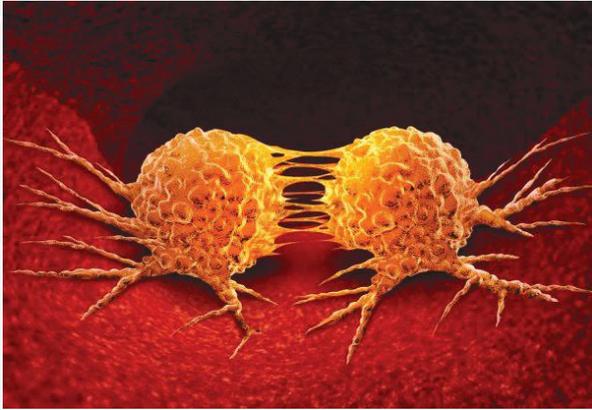
## Take Home Massage

The major contributory factor to the development of diabetes in our part of the world is the dearth of liaison between physicians and ophthalmologists. It is highly recommended for patients long term wellbeing that every patient who attends a diabetic clinic should undergo fundus examination and those who require detailed evaluation may be referred to an ophthalmologist who can then perform an optical coherence tomography and fundus fluorescein angiogram. Being in continuous attendance before the physician and not knowing the need to visit an ophthalmologist is the major cause of visual loss among diabetics. Because by the time ophthalmic symptoms appear, damage has already occurred.



Surg. Cdre. (R) Sameer Shahid Ameen  
Prof. of Ophthalmology  
(BUM&DC)<sup>4</sup> Medical Section Karachi

## CARCINOGENESIS / BACTERIAL ACTIVITY OF DENTAL CARIES



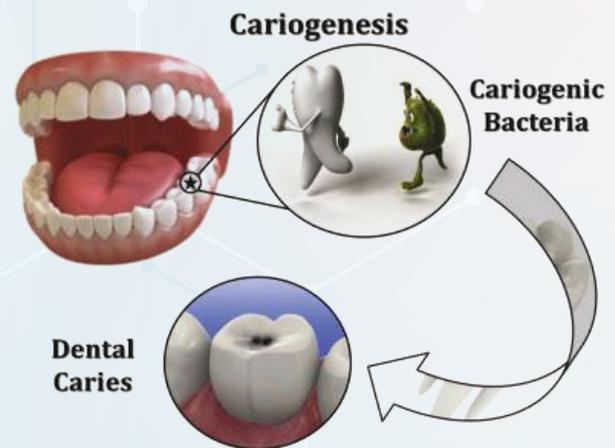
According to World Health Organization (WHO), dental caries was considered the most prevalent disease for the decay of permanent teeth, holding 12th position for the decay of deciduous teeth. According to Global Burden of Disease Study in 2015, caries was affecting permanent teeth of 2.4 billion people. Whereas, it's prevalent in 621 million children affecting their primary teeth worldwide. The Streptococcus genus has a significant role in the cariogenic process, and Streptococcus mutants has a direct relationship in the microbiology and onset of carious lesions.

Incorporating the minimal invasive dentistry (MID) philosophy, the atraumatic restorative treatment (ART) involves removal of soft caries through hand instrumentation and then restoring it with an adhesive dental cement. Similarly, with many benefits like minimal removal of tooth structure and conventional and easy approach, the most common disadvantage of ART is incomplete removal of carious lesion and presence of bacteria which may lead to secondary caries formation that results in restoration failure.

Dental caries is a multifactorial disease which is mediated by biofilm, containing microorganisms, and carbohydrates, that results in the periodic demineralization and remineralization of enamel and dentine. Glass ionomer based cements (GIC) is a dental cement which can be used as a base, lining, fissure sealant or direct restorative material because of its esthetics, biocompatible nature, antimicrobial properties due to fluoride release and direct chemical adhesion to tooth substrates. Bioactive glasses are widely accepted to form carbonated hydroxyapatite (HCA) layers with simulated body fluids. These glasses can readily form strong bonds with the surrounding hard tissues. Whereas, they tend to promote bone growth away from the bone and implant surface.

Ionomer based cement systems are considered as the material of preference in ART. As because of its inhibitory properties against bacterial acid metabolism and activity, comparable coefficients of thermal expansion to the tooth and easier clinical application. However, fluoride released by ionomer cements is not potent enough to protect the destruction caused by the bacteria over a longer time period. The probability of micro leakage and restrictions of physical properties, lead to increased risk of recurrent caries.

Studies have been conducted for multiple drug delivery systems to restorative materials mainly in ionomer based cement to reduce the formation of biofilm by decreasing the bacterial load that in turn prevent the secondary caries, thus refining antimicrobial activity and improving clinical efficacy.



**Dr. Muhammad Khawaja Hammad Uddin**  
Assistant Professor  
Department of Science of Dental Materials  
(BUM&DC)<sup>4</sup> Bahria University Dental Section  
Karachi Campus

# SALIVA AS A DIAGNOSTIC TOOL FOR DETECTION OF SYSTEMIC DISEASE



Saliva is a clear, slightly acidic and complex biological fluid composed of secretions from the major salivary glands which include parotid, submandibular and sublingual glands as well as minor salivary glands including buccal, lingual and palatal glands. In general human salivary glands produce about 1 to 1.5 liters of serous and mucinous saliva daily by combining water, salts and an abundance of molecules from the blood and salivary protein in the oral cavity to give rise to the multi constituent whole saliva.

Saliva has been progressively studied as a non-invasive and relatively stress-free diagnostic tool alternative to blood. Like blood, saliva is a complex fluid containing a variety of hormones, antibodies, antimicrobial constituents and growth factors. Many of these enter saliva from the blood by passing through the spaces between the cells by transcellular and paracellular routes. Therefore, most compounds found in blood are also present in saliva, thus saliva is functionally equivalent to serum in reflecting the physiological state of the body including hormonal, nutritional, and metabolic variations. Currently, saliva testing is used for clinical assessment of hormonal perturbations, detection of HIV antibodies, DNA analysis, and drug testing. Recently, there has been increasing interest in evaluating the diagnostic potential of saliva in obesity, inflammation, and insulin-resistance.

One of the main advantages of saliva as a diagnostic tool is that sample collection is easy and non-invasive, thus dramatically diminishing discomfort associated with blood collection and privacy issues associated with urine collection. Saliva has many advantages in terms of collection, storage, shipping, and voluminous sampling, all of these processes can be carried out very economically compared with serum or urine. Saliva is also easier to handle during diagnostic procedures than blood because it does not clot, thus reducing manipulation techniques for the patient or examinees.

The non-invasive collection approach could dramatically reduce anxiety and discomfort and increase their willingness to undergo health checkup routinely that will greatly increase the opportunity to monitor their general health over time and to diagnose morbidities.

Diabetes Mellitus is a chronic disease that affects a growing number of individuals. It is further categorized into 2 different types. Diabetes Mellitus adversely influences the overall health of the oral cavity, reduces the salivary flow rate and is a potential cause of gum inflammation which leads to loss of teeth and bone resorption. It is also associated with an increased risk of dental caries. It is important to identify those factors and improve the oral health quality of the affected person. The current project will help us in identifying the proteins and cytokines responsible for producing the changes in the oral conditions of the diabetic patients and can also predict the development of chronic oral inflammatory conditions. It will also enable the dentists to identify these potential oral conditions at an early stage and prevent their progression.

Hypertension on the other hand causes a rise in blood pressure and its prevalence increases with age. More than 70% of Pakistani population above the age of 50 years is affected by hypertension. It produces adverse effects on the systemic and oral health of the patients. The pharmacological agents commonly prescribed for the treatment of hypertension cause a xerogenic affect and are also believed to alter salivary composition. Different salivary proteins are present in saliva, each having specific functions. Difference has been observed within the composition of salivary amylase, total protein concentration and in the level of mucin within the diabetic and hypertensive patients.

For the assessment of the levels of proteins and cytokines we will be using ELISA (Enzyme Linked Immunosorbent Assay) technique. ELISA is the gold standard for evaluating the protein and cytokine levels in body fluids.

**Dr. Madiha Anwar**

Senior Lecturer, Department of Oral Biology  
(BUM&DC)<sup>4</sup> Bahria University Dental Section  
Karachi Campus

## AN EVALUATION OF JOURNAL CLUB AMONG DENTAL INTERNS



Journal clubs have been used among professionals and students in both academic and clinical settings for more than 200 years. The Journal Club meetings enabled students and clinicians to apply evidence based practices in their relevant field. The implementation of Journal club encouraged students to practice evidence based practice by searching relevant research, gathered data for application of the best practice, actively participating in discussion with peers and seniors via critical appraising the published literature and feasibility of execution in their own setting.

Likewise; three domains of learning such as knowledge (searching relevant research, gathered data for application of the best practice), cognitive (actively participating in discussion with peers and seniors via critical appraising the published literature) and affective domains (likelihood of executing projects) will be enhanced by self-directed learning process. To critiquing any literature is possible when there is a habit of reading the current innovations in the field. Hence; structured Journal Club is a way forward to enhance research culture.

For final year dental and medical students; it is vital to understand the importance of evidence based practices and critically appraise the best practices and innovations in clinical settings when they are a step away from entering in their independent practice. In addition, regularly attending the journal club meetings would enable them to search relevant literature, understand healthcare research, learn presentation skills and critiquing the literature, and take initiative to formulate research plans; all these steps transform students into self-directed learners. Journal Club is executed among faculties of dental section of Bahria University Medical and Dental College (BUMDC) since its inception.

JC is a structured educational activity and its schedule is disseminated to all dental interns at the beginning of their house job training. The ideology behind this educational activity is to highlight importance of healthcare research and is based on change of research culture of publish not perish among dental house officers. The meeting of Journal club is conducted on every Friday and is headed by senior faculty member. Two house officers are nominated to present their article as per schedule. The nominated house officers are required to fill a JC submission form at least one week before the allotted day and subject of the article is preferably from the same clinical department where the interns are posted at that time. The evidence based article must be of last five years. House officers present their article in the form of a powerpoint presentation for 15 minutes followed by discussion and question answer session. This presentation is supervised by the senior faculty member of the same department.

Attendance is taken before commencing the JC meeting. It is well said that evaluation is an integral part of any educational activity and it is never being stagnant; for continuous development it must be reviewed to evaluate the change process. Therefore; the rationale of this project was to evaluate this journal club activity among dental house officers at the end of the academic year. The outcome of this evaluation would be helpful to revise this program.

**Kiran Fatima BANA**  
 Department of Dental Education  
 (BUM&DC)<sup>4</sup> Bahria University Dental Section  
 Karachi Campus

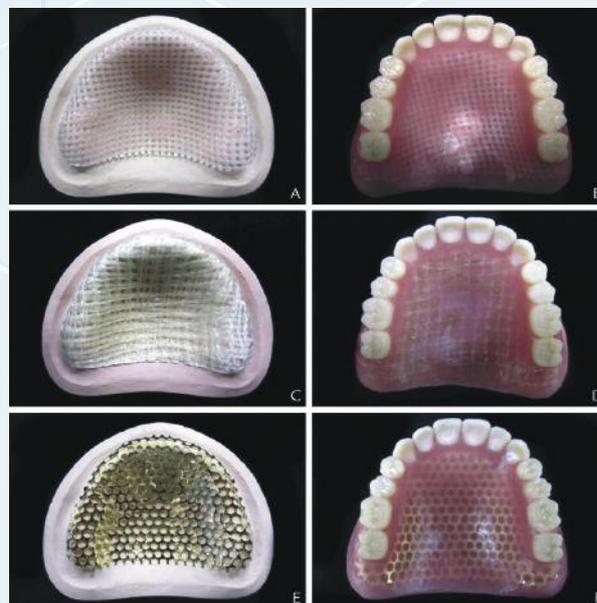
## ROLE OF SILVER NANOPARTICLES IN ACRYLIC RESIN DENTURE BASES

Acrylic partial dentures cover the large section of prosthodontics specialty, especially in community hospital based settings. Polymethylmethacrylate (PMMA) polymers are popular as a denture base material. They were first introduced by Wright in 1937. It is believed to possess many qualities like being economical, easy to fabricate and repair with good adaptation capability. It has good biocompatibility, colour durability with satisfactory aesthetic outcomes. Besides its various merits as a denture base material, literature has shown a major disadvantage that it promotes the formation of biofilm and thus enhances the incidence of denture stomatitis and related consequences.

Denture-related stomatitis refers to an inflammatory state of the denture bearing mucosa, characterized by chronic erythema and edema of part or all of the mucosa beneath maxillary dentures. It is the most commonly encountered mucosal lesion with removable prostheses, and affects one in every three complete denture wearers. The frequency of its development is 25–67%, frequently seen among female patients; and prevalence increases with age. Although it has a multifactorial aetiology, one of the prominent causes is candida infections. The employment of oral hygiene methods has limited success in reducing the effectiveness of these pathogens. Hence, research on broad-spectrum antimicrobial acrylic resin materials have attracted much interest in recent times.

Nanotechnology is defined as the design, characterization and application of structures, devices and systems by controlling shape and size at a nanometer scale (1 nm to 100 nm). Among various nanoparticles, silver nanoparticles have been one of the most popular objects of study in recent decades. Silver nanoparticles contain 20 to 15,000 silver atoms, and their diameters are usually smaller than 100 nm. Due to a large surface-to-volume ratio, silver nanoparticles exhibit remarkable antimicrobial activity, even at a low concentration. In addition, they are low cost and have shown low cytotoxicity and immunological response. Therefore, silver nanoparticles have multiple potential biomedical applications. In dentistry, silver nanoparticles have been used to develop antibacterial materials to improve the quality of the dental appliance for a better treatment outcome.

Silver (Ag<sup>+</sup>) is believed to interact with microorganisms via two mechanisms. Firstly, it binds to sulfur-containing proteins in the biological membrane resulting in pore formation.



This occurs through the formation of reactive oxygen species in the membrane zone causing cell permeability and death. Secondly, it interferes with cell cycle. Therefore, it can be successfully used in the form of nanoparticles and it may be incorporated in various dental materials to acquire therapeutic effects. However, the instability of Ag<sup>+</sup> restricts its practical implementation. The problem can be resolved by protecting the Ag<sup>+</sup> with a polymeric matrix sheath. The major advantage of using AgNPs arises from their large ratio of surface area to volume. AgNPs exhibit more effective ion release and enhanced antimicrobial activity. AgNPs are preferred for this reason, alongside additional functional assets such as their ductility, electrical and thermal conductivity. Regarding the incorporation of silver nanoparticles to enhance the mechanical properties of PMMA-based materials, it depends on the concentration, dispersion and even the synthesis method used on materials.

For the preparation of nanocomposites, three approaches have been developed: (a) mixing nanoparticles with the polymer, (b) generating nanoparticles during polymerization, (c) adding nanoparticles to the monomer.

The economic boom of acrylic as denture base material plus the anti-bacterial nature of silver nanoparticles has propelled the concept of this project. The basic target revolves around the exploration of anti-bacterial and mechanical properties of silver incorporated acrylic dentures.

This study will be conducted at the Department of Prosthodontics in Bahria University Dental Hospital with 2 years' study duration. This project comprises multiple phases to meet the objectives of the study. Initially, material aspects will be investigated which includes physical, thermal and mechanical properties analysis with its effects on cells. Once all the in- vitro investigations are completed to ensure the safety of the material, the project will enter the phase of clinical trial on partially dentate patients.

In developing countries like Pakistan, the number of patients wearing removable dentures is increasing but only few patients choose cast partial dentures as a definitive treatment option, especially in community based hospitals. Moreover, complete edentulism is majorly treated with acrylic complete dentures. This is primarily because of the higher cost of the cast or implant supported prosthesis. This will be valuable especially in developing countries like ours where the majority population can't afford metal denture bases due to the limited financial circumstances and lack of proper health care system and medical benefits. Moreover, we could generate a silver nanoparticle incorporating PMMA to be used by dental fraternity so as to effectively utilize these silver modified dentures as therapy in patients combating denture stomatitis.

Thus, the incorporation of silver nanoparticles in acrylic based dentures can promote better oral health in prosthesis users, helping to improve their quality of life.

**Dr. Saman Hakeem**  
Professor of Prosthodontics  
(BUM&DC)<sup>4</sup> Bahria University Dental Section Karachi Campus

## PERSISTENCE OF SYMPTOMS

### After End Of Isolation Among Patients Diagnosed Positive For Covid-19

On 31<sup>st</sup> December 2019, China informed the World Health Organization (WHO) of the epidemic and eventually the Sea Food Market was locked then the number of cases began to increase dramatically. The WHO rated the global danger of COVID-19 as very high. The number of incidents, fatalities and impacted countries escalated significantly over the months. Not only it escalated in China but developing countries like Pakistan also came into the limelight when it registered its first case from Karachi on February 26, 2020.

Covid-19 has affected the whole planet and currently Pakistan is having 581K confirmed cases in Pakistan, with the highest number of cases registered in Sindh (258K) followed by Punjab and other provinces. As soon as covid-19 broke out, preventive measures like wearing a mask, keeping a physical distancing of 6 feet, and other measures like hand hygiene became necessary for everyone to follow. For health care providers, it has been a task to prepare ahead effectively to assess the infection potential of SARS-Cov-2 without ready access to screening tools and strategic plans focused on the viability of healthcare networks to deal with the epidemic.

### Signs & Symptoms Of Covid-19

Medical symptoms of SARS-Cov-2 were complex relative to influenza. Symptoms of Covid-19 also differ significantly from country to country. Asymptomatic, moderate and severe symptoms have been observed in different trials. Asymptomatic or milder patients did not require medical intervention; mild symptoms generally included temperature  $> 37.5^{\circ} \text{C}$  and dry cough which may progress to severe symptomatic cases. Fever, cough, gastrointestinal pain, and deteriorated blood biomarkers have been reported in mild cases. Extreme cases met with shortness of breath, dyspnea and tachypnea, requiring artificial ventilation. Persistent cough, fever, and weakness were related signs of underlying pathology or pre-existing pathology not limited to cardiovascular complications, hypertension, liver disease and diabetes. Persistent fever and typical persistent cough initially dry for many days accompanied by active cough are the major features in patients with pre-existing respiratory infections; some of the signs were inconsistent with regional areas.



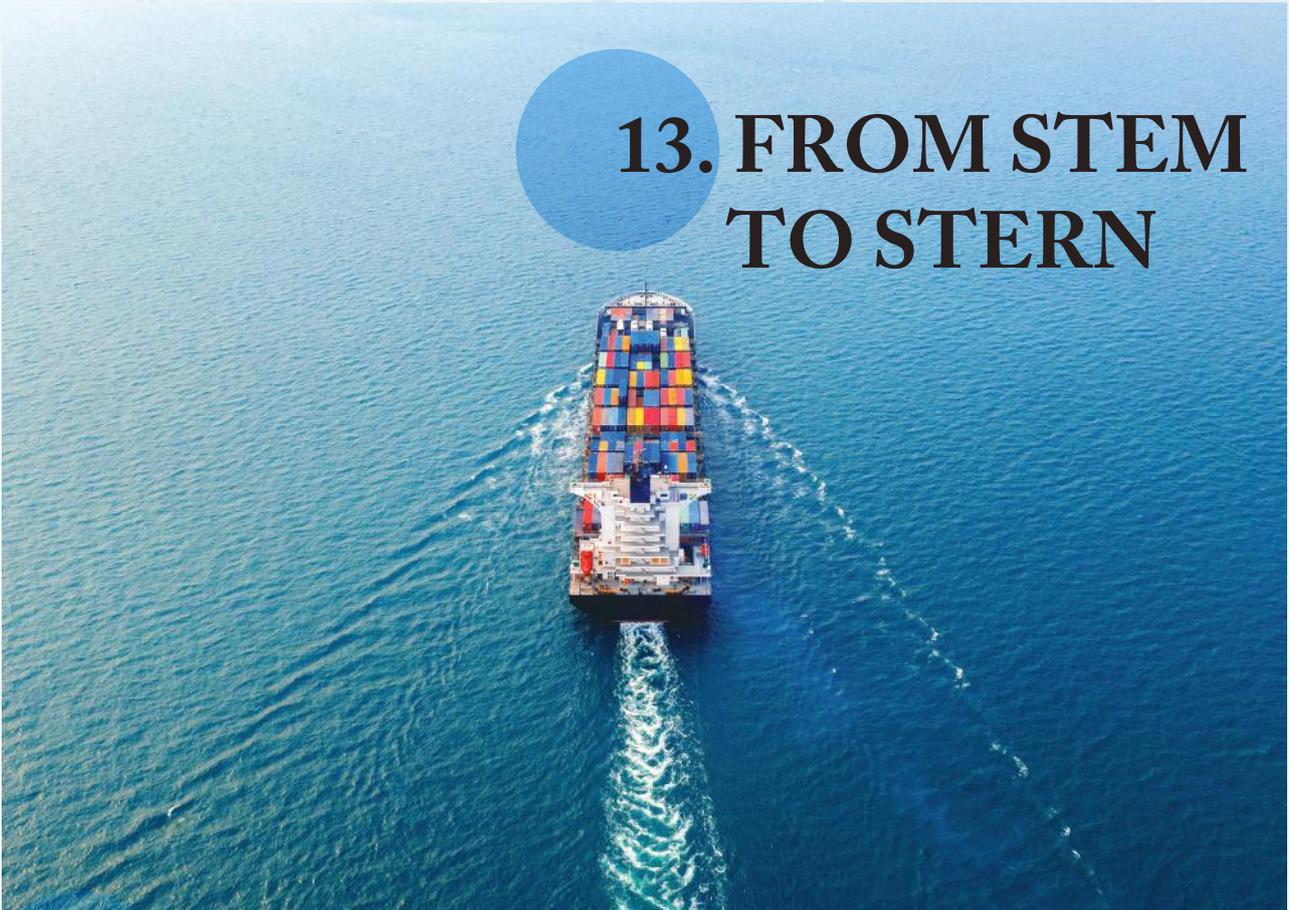
The presentation of covid-19 is different among different populations. Measures of health like morbidity and mortality have varied across different groups which include ethnic groups, religious sects, urban and rural, healthcare professionals and old aged people. Although literature search has identified multiple signs & symptoms which occur during the course of covid-19 and keeping in view the different immunity levels of the population, yet there is not much work done regarding the signs and symptoms which still persists even after covid-19 isolation time period ended.

Similarly in Pakistan the recovered rate of COVID positive patients is almost 96%. With such a significant percent of patient recovery and due to the novelty of the disease the signs and symptoms which may persist after the end of the isolation period need to be explored carefully. Hence the Department of Community & Preventive Dentistry decided to carefully design an online questionnaire to be disseminated to covid-19 recovered patients to assess the signs and symptoms that persists after their end of isolation period. The methods of relieving symptoms and psychological components will also be assessed via this analytical design. The questionnaire will be disseminated via online on whatsapp and other social media platforms. The study will add novelty to the literature and will help allied medical professionals to alleviate the effects of the disease at an early stage.

**Dr. Muhammad Mohsin Haider**

Senior Lecturer, Dept. of Community  
and Preventive Dentistry  
(BUM&DC)<sup>4</sup> Bahria University Dental Section  
Karachi Campus

# 13. FROM STEM TO STERN



## UNITED NATIONS

### Decade Of Ocean Science For Sustainable Development (2021-2030)

The United Nations Decade of Ocean Science for Sustainable Development (2021-2030) is to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science can fully support countries in creating improved conditions for sustainable development of the Ocean.

Oceans face multiple environmental stressors (climate change, marine pollution, ocean acidification) engendered by human activities and resulting in the loss of marine species and degradation of marine and coastal environments. Over the coming decades, a changing climate, growing global population, and increased environmental stressors will have significant yet highly uncertain impacts on food security and human well-fare.

The Decade will address knowledge gaps through integrated research and would establish missing or strengthen weak links of science to marine applications of direct social benefits.

The Decade will catalyze significant investments in ocean science as well as stimulate research agenda at the national level by aligning science priorities with national commitments towards the sustainable development agenda. The Decade will raise awareness on the truly global dimension of the ocean, its economic services, demonstrating that its well-being affects people locally and globally. The Decade will initiate a coordinated framework responding to regionally driven priorities to improve the scientific knowledge base through capacity development for nations and groups that are presently limited in capacity and capability.

The Decade will address both the deep disciplinary understanding of ocean processes and solution-oriented research to generate new knowledge. This knowledge will support societal actors in reducing pressures on the ocean, preserving and restoring ocean ecosystems, and safeguarding ocean-related prosperity for generations to come. Building on existing research and initiatives, the Decade will boost international cooperation in developing scientific research and innovative technologies, connecting ocean science with societal needs.

The Decade will turn the scientific knowledge and understanding into practical actions supporting improved ocean management, stewardship, and sustainable development, procuring a clean Ocean whereby sources of pollution are identified, quantified, and reduced, and pollutants removed from the Ocean. A healthy and resilient Ocean whereby marine ecosystems are mapped and protected, multiple impacts (including climate change) are measured and reduced, and provision of ocean ecosystem services are maintained. A predicted Ocean whereby society can understand current and future ocean conditions forecast their change and impact on human wellbeing and livelihoods. A safe Ocean whereby human communities are protected from ocean hazards and where the safety of operations at sea and on the coast is ensured. A sustainably harvested and productive Ocean ensuring the provision of food supply and alternative livelihoods. A transparent and accessible Ocean whereby all nations, stakeholders, and citizens have access to Ocean data and information, technologies, and capacities to inform their decisions.

Advancing the oceans' sustainable use and conservation requires effective strategies and management to combat the adverse effects of overfishing, growing ocean acidification, and worsening coastal eutrophication. The expansion of protected areas for marine biodiversity, intensification of research capacity, and ocean science funding increases remain critically important to preserve marine resources.

## Challenges Of Ocean Decade To Pakistan

Pakistan is among those countries facing alarming situations due to sharp declines in fish stock and urgently requires taking measures to sustain fisheries resources. Recent Stock Assessment Surveys conducted in Pakistan Exclusive Economic Zone under Fisheries Resource Assessment Project 2008 -2015 (FRAP) by the Marine Fisheries Department with the FAO's technical assistance indicated many of the most valuable groups had declined significantly since the 2010 survey. Major commercial stocks were overfished/overexploited and showing a declining Maximum Sustainable Yield (MSY) trend. Control and reduction of fishing effort are required to stop this overexploitation, and significant reductions in fishing effort must have any expectations for reviving the most valuable fishery resources.

Sustainability of the marine fisheries is one of the Targets of SDG 14, therefore, aligned to the recent Fisheries Resource Assessment Report (FAO/MFD 2016), Pakistan requires to effectively regulate harvesting and stop overfishing, illegal, unreported, and unregulated (IUU) fishing, fishing through destructive fishing gears. Implementing a science-based management plan that is regularly monitored is critical to the survival and revival of Pakistan's fishery sector.

Untreated agricultural, industrial and municipal runoffs into the coastal zones are rampant, and the appearance of algal bloom in the coastal waters and beyond are a common occurrence resulting in "fish kills." Eutrophication (nutrient enrichment) is a significant source of phosphorus and nitrogen in the coastal waters that destroy the nursery grounds of high commercial value fish stocks.

A serious effort is required to be undertaken to minimize the direct flow of industrial, domestic, and agricultural effluents into the Arabian Sea as the extensive oceanographic campaign during the Ocean Decade would primarily be focused on the health of the oceans, precisely map natural and land-based drivers and identify and quantify these. It is logical to believe that states held contributing and responsible will be asked to stop such activities and remove the ocean health deteriorating factors.

The Ocean Decade (2021-2030) can also be an excellent opportunity for developing and strengthening the maritime sector for institutional and human resource development to keep pace with the growing demand under the Ocean Decade. It is pertinent that Bahria University enhances its research capacities both in terms of the upgradation of field/laboratory facilities and expanding and strengthening scientific and technical human resources in the applied marine sciences.

The research capabilities of BUKC can be enhanced substantially through the acquisition of a research boat that will open doors for carrying out ocean observations and research avenues within the coastal areas of Pakistan through developing a coastal monitoring program to ensure ocean health and for monitoring seawater quality.

## Glossary

1. Bahria Business School (BBS)
2. Bahria Humanities and Social Sciences School (BH3S)
3. Bahria School of Engineering and Applied Sciences (BSEAS)
4. Bahria University Medical and Dental College (BUMDC)
5. Institute of Professional Psychology (IPP)
6. Well Being Center (WBC)



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For Reviewing BU Publication

Email: [marketingdirectorate@bahria.edu.pk](mailto:marketingdirectorate@bahria.edu.pk)