

SMILE IS A MEDICINE

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ABSTRACT

Smile is an indispensable human facial expression that enhances the reward value of an appealing face. For millennia, the smile has been recognised as a powerful communicative device, offering benefits to both giver and receiver. A sign of compassion, empathy and friendliness, smile can benefit healthcare professionals and their patients as well. It may facilitate a bond of assurance, hope and trust. But beware the fake smile, which is all too easily identified and may do more harm than good. However no one ever explored it as a medicine that what does a humble and a cheerful smile might afford to the health profession. This review explores the literature surrounding smile in healthcare and beyond, conversing the rationale behind being cheerful, from good health to success in life. Hence a literature search from PubMed, Wiley& Sons, Science direct and Indian scientific journals was done to correlate smile and medicine.

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INTRODUCTION

World's most admired, cherished and treasured painting of Mona Lisa is about an incredible, inimitable unique smile. It illustrates how does a genuine and a sincere smile can do enormous wonders. Researchers cite smile as "a symbol that is rated with the highest positive emotional content"

Since old times the smile has been recognised as an incredibly powerful communicative device. The Book of Proverbs enlighten as 'smiling faces make you happy' (Proverbs 15:30).<sup>1</sup>A book 'The expression of the emotions' written by Charles Darwin in 19<sup>th</sup> century explores the nature of smile in which he described the smile as a common facial mechanism for communicating happiness or joy.<sup>2</sup>

Whether it is a pleasing smile of a receptionist welcoming guests or compassionate smile of a caring nurse. Furthermore winning smile of cheerleaders to an adorable, real smile of a newborn baby. Smile says it all. Smile does create a charisma in individual's hearts. However no one ever explored it as a medicine that what does a humble and cheerful smile might afford to the health profession.

Biology and Types of Smile

Famous French neurologist Guillaume Duchenne in the sphere of mid-19th century, identified two distinct types of smiles. A Duchenne smile involves contraction of both the zygomatic major muscle (which raises the corners of the mouth) and the orbicularis oculi muscle (which raises the cheeks).<sup>3</sup>

Figure-1

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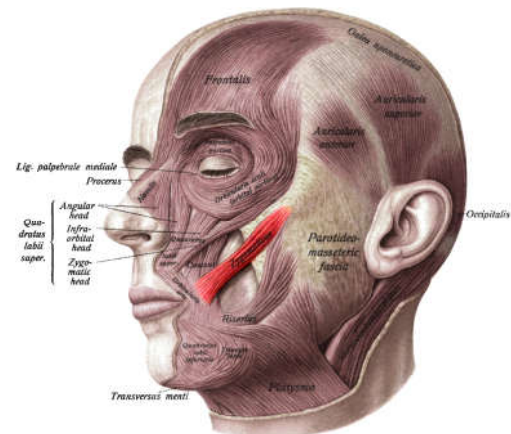


Figure 1 Muscles of the smile. Both zygomaticus major and orbicularis oris are activated in the genuine 'Duchenne' smile, while only zygomaticus major is activated in a voluntary, or forced, smile.

The Duchenne smile has been described as "smiling with the eyes" furthermore may well be stated as 'eyes don't lie'. He described beautifully the contraction of these muscles as 'the first obeys the will, but the second is only put in play by the sweet emotions of the soul'. More specifically that the genuine smile is hard to replicate without a truly joyful stimulus. This Duchenne smile is what we generally consider to be a 'genuine' smile or a "true smile" and smiling without contraction of the orbicularis oculi muscle is often perceived as 'fake', also known as non-Duchenne or deliberate smiling or a "social" smile.<sup>4</sup>An exaggerated Duchenne smile is associated with lying.<sup>5</sup>

Even in 1873, Darwin observed the ease with which people were able to identify a false smile. He described more than

85% of individuals recognised the false nature of a smile in a photograph; the remainder unable to decipher the expression. Niedental -et-al proposed three ways by which a person distinguishes between real and fake smile. Firstly the brain compares the geometry of a person's face to a standard smile. Secondly he/she thinks about the situation and judge whether a smile is expected or not. Finally instinctively impersonates the smile, to experience whether it is fake or real.<sup>6</sup>

The Pan Am smile, also known as the "Botox smile", is the name given to a fake smile, in which only the zygomatic major muscle is voluntarily contracted to show politeness. It is named after the now defunct airline Pan American World Airways, whose flight attendants would always flash every passenger the same perfunctory smile. Botox was introduced for cosmetic use in 2002.<sup>7</sup> Persistent use of Botox injections to deal with eye wrinkle can result in the paralysis of the small muscles around the eyes, preventing the appearance of a *Duchenne* smile.<sup>7</sup>

### Perfect Smile

The science of the perfect smile as rightly suggested by Charles Hulsey intimates aesthetically desirable factors in a smile which includes: symmetry, a good 'smile line ratio' (harmony between the arcs of the teeth and the lips), an upper lip rise to the top of the middle teeth, and corners of the mouth higher than the midline height. It is important to bear the beneficiary of your smile in mind, and ethnicity and gender appear to notably influence perceptions.<sup>8</sup>Figure-2



**Figure 2** Smile measurements. A, Arch ratio; B, Upper Lip height; C, Buccal corridor ratio; D, Smile Index; E, Lower teeth exposure; F, Interlabial gap.

### Beneficiary/ Receptient's Aspect

A smile can represent a social reward to the perceiver, stimulating the brain's reward system via the basal ganglia, prefrontal cortex and, to a lesser degree, the amygdale.<sup>5</sup> Functional MRI studies have revealed the dopamine-associated reward processing regions of a mother's brain lighting up impressively in response to a smile from an infant.<sup>5</sup> A person acknowledges a smile at twice the distance match up to other facial expression and it is typical for the perceiver to automatically mimic the expression, usually within half a second. In fact, it has been shown that automatic reciprocation of the smile, measured as activation of smiling muscles begins so quickly that it is almost impossible to avoid doing so.<sup>5</sup>

So when we smile at our patients, there is a very good chance that they will be entirely unable to avoid feeling a little better, whether or not they return the smile. A kind-hearted smile to patients may help them to remember you as a kind, humble, helping and trustworthy person giving a human touch of feelings. The health care workers deal with human which is a noble profession and no business of machines. Therefore human feelings of compassion, kindness and sympathy are imperative.

A long verbal communication loaded with many scientific information or clinical facts may not achieve the goal which sometime a non-verbal interaction, like smile or a gentle touch can achieve. Showing genuine sympathy or empathy as a clinician is an efficient method of conveying helpful information to the patient, which can positively influence their emotions and behaviour. However, beware the potential of the false smile to demolish any semblance of a valuable patient-clinician rapport.

Palliative care is an interdisciplinary approach to life limiting illnesses. Goal of which is improve quality of life for both person and family. Important part of end-of-life care to provide symptom management, psychosocial and spiritual support.<sup>9</sup> A similar term is hospice care which focuses on 5C:communication, collaboration, compassionate care, comfort, and cultural care.<sup>10</sup> Such experiences are backed up by evidence from nursing, where patients reported greater confidence in their nurse's skill level than their doctors when they seemed to be happy and smiling.

It has been suggested that smiling helps clinicians build a good rapport with patients, helps ease patients' anxieties and instils feelings of trust towards the clinician. The financial and emotional burden of illness is borne by patients, relatives and friends. A smile from a loved one, or a encouraging smile from a clinician may even continue the chain of emotional interface far outside the hospital walls.

### Philanthropist /Contributor's Aspect

The benefits to the benefactor or contributor are also numerous, even when the smile is voluntary rather than spontaneous. Researchers have demonstrated that voluntary smiling can produce similar electrical brain activity to spontaneous, or genuine, smiling. This may be result of the activation of feedback pathways from muscles of facial expression to the brain, physiologically triggering happy emotions.

In a research Diener and Chan concluded that happy people live longer and enjoy better. Happiness is protective against both coronary heart disease<sup>11</sup> and chronic health conditions.<sup>12</sup> In addition to potential benefits to health, and with the prospect of a long life ahead, smiling could also be the key to a long and happy marriage.<sup>13</sup>

Smile activates the release of neuropeptides to counter stress. Neuropeptides facilitate happiness and excitement. The neurotransmitters like dopamine, endorphins and serotonin are released when a person is happy. Happiness as an emotion formed as a general interaction between internal (endogenic) and external (exogenic) factors. Furthermore all effective factors divided into two dimensions: endogenic and exogenic. In spite of the influence of exogenic factors on happiness, endogenic factors form the basis of happiness. Biological factors as a part of endogenic factors, in ease, divided into five

major areas: genetic factors, brain and neurotransmitters, endocrine glands and hormones, physical health and typology and attractiveness. Serotonin is a neurotransmitter that mediated satisfaction, happiness and optimism. Serotonin levels are reduced in depression, and most modern anti-depressant drugs, known as serotonin reuptake inhibitors (SSRIs), act by increasing the amount of serotonin available to brain cells. Researches indicated that increased of serotonin level was related to positive mood.<sup>14</sup>

Norepinephrine is another neurotransmitter that associated with the level of happiness. Antidepressants such as the selective norepinephrine reuptake inhibitor also induce a positive emotional perceptual bias in healthy subjects suggesting that norepinephrine positively colours the emotional perception of facial expressions in humans. Researches indicate that urinary adrenaline is a good predictor of happiness. Individuals with higher levels of "personal growth" and "purpose in life" registered lower and more stable levels of salivary cortisol and urinary adrenaline.<sup>14</sup>

Endorphin also deemed as a neurotransmitter in happiness. Endorphins are endogenous opioid peptides that function as neurotransmitters. They are released during continuous exercise, fear, love, music, chocolates eating, laughter, sex, orgasm etc. Increased level of endorphin inhibited pain in the body and reduced level of endorphin inhibited positive feelings.<sup>14</sup>

Smiling is one of the very few gestures which means the same thing all around the globe. Handshakes, thumbs up, and hugs can have completely different meanings in different countries. However, the meaning of a smile is universal. This means that you can travel anywhere in the world and communicate happiness.

Thus smile improves our own state of happiness and has a positive effect on our willingness to help others, and indeed the pleasure we derive from doing so. A smiling face makes others happy too. A Swedish study found that it is indeed difficult to keep a long face when someone smiles at you. Smiling is just contagious! So 'You smile, I smile' is actually a scientific fact! People in service sector should pursue the goal of "Service with a smile" as it makes one feel more in high spirits.

### ***Spiritual Dimension***

Smiling is definitely more than just a contraction of muscles of facial expression. Mother Teresa (1910-1997) Noble peace Prize winner in 1979 belief and sermon to the world was "peace begins with a smile" shows how a simple smile may bring peace and love in the world. In her own words "We shall never know all the good that a simple smile can do." A sincere smile shines from your soul, making the world warmer place. Health care workers should work with compassion and devotion towards patients thinking that it is service to god as also written in Ephesians 6:7 'serve wholeheartedly, as if you were serving the lord, not people.'<sup>15</sup>

Smile at someone and receive a smile in return is itself a spiritual exercise. Too often we underestimate the power of touch, a smile, a kind word, a listening ear, an honest compliment, or the smallest act of caring, all of which have the potential to turn a life around.

### ***Psychological Dimension***

As far and wide acknowledged "Laughter is the best medicine" in view of the fact that it certainly releases tension and is good for the body. Happiness is a new concept in positive psychology. The emotion circuitry of the brain is complex, involving primarily structures in the prefrontal cortex, amygdale, hippocampus, anterior cingulate cortex, and insular cortex. These structures normally work together to process and generate emotional information and emotional behaviour. Positive psychology include happiness, life quality, satisfaction optimism and so on.<sup>14</sup>

Serotonin levels are reduced in depression, and most modern anti-depressant drugs, known as serotonin reuptake inhibitors (SSRIs), act by increasing the amount of serotonin available to brain cells. Researches indicated that increased of serotonin level was related to positive mood.<sup>14</sup> A study published in the journal *Neuropsychologia* reported that seeing an attractive, smiling face activates our orbitofrontal cortex, the region in your brain that process sensory rewards.<sup>16</sup> This suggests that when you view a person smiling, you actually feel rewarded. The smile's potent reward properties have been shown to promote effective memory via functional connectivity between the orbitofrontal cortex and hippocampus, enabling subjects to remember the names of smiling faces more readily than neutral faces.<sup>16</sup> Indeed, psychologists have shown that we are more likely to trust a person who smiles, than someone who does not. Herstein and colleagues examined photographs from childhood and young adulthood and found that people who were observed to smile more intensely were less likely to divorce later in life.<sup>17</sup> Though there are limited studies and scientific literature available in support of above statement. Psychological researchers have found many benefits to the act of smiling that include improved relationships, improved mental health, and even increased lifespan!<sup>18</sup>

### ***Integrated Team Dimension***

The benefits of smiling extend beyond interpersonal relationships to the work environment. Smile facilitates a positive mood, promoting altruistic behaviour. When individuals were smiled at, they were significantly more likely to offer help to people. In a similar way, waitresses have been shown able to boost their tips by smiling to customers. Perhaps a culture of smiling may encourage effective team working, with colleagues more willing to lend a hand when things get busy or difficult. Smiling at your co-workers creates moments of connection that lead to greater productivity and teamwork.<sup>19</sup> People in the service sector prove to have a more positive effect on patients/clients when they smile. People holding chief positions tend to favour employees who smile more regularly.<sup>19</sup>

Another study, examining team working directly, showed that members of a team drew inferences regarding their performance from the emotions of their leader also lead to a positive /negative performance since it draws attention.<sup>20</sup> When feedback was delivered with a smile and an upbeat tone, workers felt that they had performed well, while the converse was true when the same feedback was delivered with a frown and an irritable tone. India's premiere institution IIHM is working this year on comprehensive outlook on happiness by working on theme "Happiness at work place."

But be watchful, as smiling too much can prevent you from being hired, as it can make your potential employer find you to be less serious or competent. An earnest recommendation is that smiling only at the beginning and end of an interview is enough to show that you are friendly, but not so friendly that you would be taken advantage of or manipulated.

This keeps the team members happy and relaxed nevertheless dependable and trustworthy. Some of the people may perhaps consider smile at work as something that makes one weak, insensible, negligent or even foolish. Never overdo or overexert smile or laugh otherwise it becomes indecent or may eventually become a fake smile. However give the impression that creating a working environment and conditions that promote high morale and happy workers would be far more beneficial than telling staff members to smile.

### **Economic Dimension**

Advertisement and marketing industry very well utilises the beneficial effects of smile. Regardless whether it be a tooth paste, cosmetics, textiles, beverages or food industry. Smile is a time tested marketing and advertising strategy of billionaire companies. Smile is adopted to enhance sales, good quality and satisfied service and better reviews for companies.

People who interacted with passionate smile had the potential to induce pleasure equivalent to being given up to large cash or eating more chocolate bars.<sup>21</sup> Those who smile and service their costumers/clients often are at an advantage resulting in a higher turnover, more profit. Their costumers/clients have more trust and confidence upon them and empower them by opting for better package and higher deals. People's response when given a choice between "good," represented with a smiling face, or "bad," represented with a frowning face. Thus smile may upshot a better short-term high in business likewise a frown can induce an opposite response.

Offering no smile at all seems more likely among men as there is almost unanimity that women smile more than men, a phenomenon largely dependent on culture, age and role.<sup>22</sup> Perhaps, there is more room for increasing smile frequency among the male contingent. However, much progress has been made since the days of gender-stereotyped suggestions in the literature that a flight attendant ought to 'really work on her smiles' and 'manage her heart' to create a smile that seems 'spontaneous and sincere'. While learning to better deliver a *Duchenne* smile could be considered a potential avenue for improvement, recent thinking suggests that this is actually an inherited 'trait' rather than a learnt skill.

### **CONCLUSION**

Smile is an adorable cute curve of mouth. In a famous yearbook study, the lives of few women were tracked who had the best smiles in yearbook photos compared to the rest. It concluded as people who smiled the most lived happier lives, happier marriages and had fewer setbacks.<sup>23</sup> The baseball card study also found a clear correlation between how big a smile someone made on a baseball card photo and how long they would live. The people who smiled the most turned out to live 7 years longer and fewer setbacks.<sup>23</sup> Certainly, the above two statements can be considered a scientific evidence although simply shows a correlation, and not causation. Nevertheless smiling boosts up trust, makes one happier and helps live longer and better. One most significant aspect is that smiling can be learnt or even re-learnt. Most of the people

forget how to smile genuinely over time, as we adopt social smiles further. Last but not the least a gentle word, a kind look, a genuine smile can work wonders and may perhaps accomplish miracles!

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