

**Mediating Role of Mindfulness between
Emotional Regulation and Burnout among Medical Students**



By

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Abstract

The present research was aimed to investigate the mediating role of mindfulness between emotion regulation, and burnout among medical students. Convenient sampling method was used to get medical students ($N = 257$) from different public and private sector medical colleges of Islamabad and Rawalpindi. The age of participants ranged between 18 to 25 years ($M = 21.2$; $SD = 1.49$). Emotion Regulation Questionnaire (Gross & John, 2003) was used to measure emotional regulation, Mindful Attention Awareness Scale (Brown & Ryan, 2003) was used to measure mindfulness, and Maslach Burnout Inventory Student Survey (Schaufeli et al., 2002) was used to measure burnout among medical students. The reliabilities of the questionnaire were found to be satisfactory. Hypotheses based upon past literature, were tested and findings are discussed subsequently. Results indicated positive relationship between emotional regulation and mindfulness, a negative relationship between emotional regulation and burnout, and mindfulness significantly mediated the relationship between emotional regulation and burnout. Significant group differences were also found where female students had better emotional regulation. Medical students in private sector colleges were found to be more mindful, experience less burnout, and can regulate emotions better than medical students of public sector colleges. Day-scholars reported more burnout than hostelite students. Similarly, significant results were also found for medical years group differences where students in later years of medical education experience more burnout, cynicism and less academic efficacy as compare to those students who are in initial years of medical education. These findings can lead to better understand mediating role of mindfulness between emotional regulation and burnout among medical students.

Dedicated to

my Ammi G & Abbu G

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Introduction

Introduction

Emotion is the conscious experience described by heightened mental activity and a certain degree of pleasure or displeasure. Scientific discourse has glided to other meanings and there is no concurrence on a definition. Emotions are complex processes that differ in their intensity, duration, and speed. Intensity ranges from minor to irresistible panic-like responses (in duration and speed) and also they vary in their onset and decline. Some of the emotions can rise and fall slowly like sadness, whereas other emotions can rapidly rise to their highest and return to baseline just as speedily like disgust (Davidson, 1998). Some theories defined emotions as they are the feelings of different conditions that influence our behavior and results in psychological and physical changes (Cabanac, 2002). Usually emotions are pleasingly helpful. Emotions can enhance sensory intake, regulate, and enhance decision making, direct attention to main points in the environment, and ready behavioral retorts, eases social dealings, and boost episodic memory. However emotions can harm as well as help, particularly when they are of the wrong type, intensity or duration for a given situation. At such movements one tries to regulate one's emotions (Gross, 2014).

Explaining emotions in terms of two factors Schachter and Singer (1962) say that there are two basic factors of emotions including physiological arousal and cognitive label. According to the theory, a physiological stimulation occurs whenever an emotion is felt and the person uses the direct environment to explore for emotional clues to label the physiological stimulation. It sometimes results in misinterpretations of emotions due to body's physiological state. Sometimes when an emotion occurs the brain does not know why it feels an emotion then the brain relies on exterior stimulus for signals on how to label the emotion (Schachter & Singer, 1962).

Similarly, according to appraisal theorists (Roseman & Smith, 2001; Scherer, 1993; Smith & Ellsworth, 1987) emotions are elicited when a person evaluates an event or situation as important for his or her wellbeing and central concerns. Furthermore, they hold that the quality and intensity of the elicited emotion will not depend upon the situation itself but upon the person's subjective evaluation of the situation in terms of a set of appraisal dimensions. This is supported by several



empirical findings obtained in naturally occurring situations (Folkman & Lazarus, 1985; Levine, 1996; Smith & Ellsworth, 1987) and in laboratory studies (Ellsworth & Smith, 1988; Scherer, 1993; Smith & Lazarus, 1993). In an experimental study Siemer & Reisenzein, (2007) created an ambiguous situation, which provoked different emotional reactions across participants. Participants' differing reactions could be predicted by their specific appraisal profiles, leading the authors to the conclusion that "appraisals may be necessary and sufficient to determine different emotional reactions towards a particular situation" (p. 592). This conclusion constitutes the core postulate of appraisal theories.

Moreover, among appraisal theorists there is general consensus on a standard set of necessary dimensions presumed to underlie the appraisal process as an event unfolds, the individual concerned evaluates its significance on a number of criteria such as its importance and consequences for one's wellbeing, whether it is conducive for or obstructs one's plans and goals and the ability to cope with the event and its consequences (Roseman & Smith, 2001; Sander, Grandjean, & Scherer, 2005).

These basic appraisals were also postulated in the pioneering work of Lazarus (1966) to explain the emotions resulting from the transaction between the person and his/her environment in stressful situations. Specifically, Lazarus held that, when people experience an event, they evaluate whether it is benign, threatening, or irrelevant for their wellbeing (primary appraisal) and whether they have the resources necessary to cope with the event (secondary appraisal). Primary appraisal is principally related to the intensity and valence of emotion whereas the estimated coping potential is fundamental in further emotion differentiation (Lazarus, 1991).

Emotional Regulation

Regulation of emotion or emotional self-regulation is called the capability through which an individual answers to the continuing strains of experience by using several emotions in a way that is socially acceptable and effectively malleable to permit impulsive responses also the facility to interrupt impulsive reactions according to desire. Regulation of emotion is articulated through different adaptive and nonadaptive cognitive strategies that are applicable in different situations by the individuals (Garnefski & Kraaij, 2007). A set of skills linked to emotional information and the dispensation of emotions is called emotional regulation (Mayer, Roberts, &

Barsade, 2008). The complex process of emotional regulation includes initiating, hindering, or moderating behavior of an individual in a certain condition for instance the cognitive responses (thoughts), individual's experience (feelings), physiological replies associated to emotions (for example hormonal activity), and behaviors connected to emotions (expressions or bodily actions). Functionally, emotional regulation can also refer to processes such as the tendency to focus one's attention to a task and the ability to suppress inappropriate behavior under instruction (Koole, 2009).

Emotion regulation permits individuals to associate widely separated systems to one another and to accomplish the intersystem integration producing a series of organized responses that adapt to the social surroundings and the situational demands. Accordingly, based on the environmental strains, individuals regulate a group of emotion-related methods to accomplish individual goals. In another way, emotion regulation contains not only the modulation of affects but also emotion-related physiological, attentional, motivational, behavioral, and cognitive processes. The direction of the changes in these domains depends on the situational demands and individual goals. Individuals can increase, decrease or maintain current emotion-related states to satisfy the social demands (Spinrad et al., 2006).

Regulation of emotions is a function which is highly important for human life. In daily routine, there could be a wide variety of possible stimuli by which people are frequently affected. Unrestricted, exciting, or unsuitable emotional responses to a stimuli could hamper efficient acceptability within society, so people should practice at least some forms of emotional regulation almost every time (Koole, 2009). Dysregulation of emotions has been referred to as problems in regulating the effect of arousal of emotions on the quality and organization of different thoughts, activities, and dealings. Emotionally dysregulated individuals display patterns of replying which represents an incongruity among their responses, objectives of communication, and the burdens of social environment (Zeman, Cassano, Perry-Parrish, & Stegall, 2006).

For instance, emotional dysregulation has a significant association with symptoms of anxiety, depression, substance abuse, and eating pathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Prepared with the capability to understand the

reasons of other's emotions (Salovey & Mayer, 1990), individuals who are emotionally intelligent should be capable to understand and take the viewpoint of their associate's communication, because they know why they are feeling the emotions that they do. So, individuals with more emotional intelligence could grow close interpersonal bonds and are capable to offer better social support. For example, a medical student who has high level of emotional intelligence understands that patients are nervous because of a specific procedure should be capable to encourage them that the procedure will not have unexpected negative penalties and give emotional support to the patients efficiently. In distinction, a medical student who has lower emotional intelligence can direct the nervousness in an inappropriate way, for instance, by considering a patient is chronically anxious, could face difficulty in providing support and this could hinder performance on doctor-patient communications.

According to the explanation given above effective emotional regulation should boost up effective social communication between doctor and client (Wong & Law, 2002). Some of the strategies of emotional regulation (suppression) strengthen social bonds, though other strategies (avoidance) generate resistance among individuals (Gross & John, 2003). Emotional intelligence helps the individual to pick the strategies that expedite their social interactions, like providing social support to others and declining strategies such as avoidance that negatively effects social connections (Grandey, 2003). So, medical students who are more emotionally intelligent should devise effective strategies for regulating emotions than those with low emotional intelligence.

Strategies for emotional regulation. Emotions are significant and basic experience of human life and contained diverse mechanisms, such as cognitive appraisal, subjective feelings, physiological reactions, and exploit predispositions (Kleinginna & Kleinginna, 1981). Emotions can be dysfunctional when interferes with an individual's capability of behaving adaptively and consequently effective emotional regulation, when required, is vital for emotional wellbeing. Problems in adaptive emotional regulation are linked to diverse psychopathologies such as anxiety disorders and depression (Moyal, Henik, & Anholt, 2014).

Distraction. Distraction is one of the antecedent-focused strategies of emotional regulation that means it can be implemented before the generation of the emotion. The placement of attention away from a negative side of a condition, to a neutral or positive side constituted is by distraction (Gross, 1998). Attention could be deployed both externally and internally. In external attention one focuses on the figure of a particular stimulus and in internal attention focus is on the positive thoughts. Various studies found distraction as an operative emotional regulation strategy (Kaminsky et al., 2009; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Sheppes & Meiran, 2007). For example, a study found that in conditions where emotional stimuli are extremely powerful, people tend to choose distraction and it was also found that negative affect of depression can be reduced by distraction (Nolen-Hoeksema et al., 2008).

Furthermore, during Cognitive Behavioral Therapy (CBT), client requires to divert himself from negative conditions that can be a reason for dysphoria (Beck, 2011). Findings of this research are parallel with study on brain activation throughout distraction that show decreased stimulation in the amygdala which is responsible for emotions and memory, but increased stimulation in the ventro-medial prefrontal cortex, which is responsible for the inhibition of emotional responses and decision making (Kaminsky et al., 2009; Kanske, Heissler, Schönfelder, & Wessa, 2012).

Reappraisal. This is an antecedent-focused approach, which is executed next to distraction in the procedure of emotional regulation. A thought alteration of the meaning of an emotion provoking situation established by reappraisal, to decrease negative emotional state (Gross, 1998). It has been found that this strategy is extremely adaptive and individual who use reappraisal display less symptoms of depression and better wellbeing in comparison with the individual who did not practice reappraisal (Gross & John, 2003). Furthermore, various studies confirmed that contestants reported less negative affect compared to a control group, when overtly asked to practice reappraisal (Sheppes & Meiran, 2007; Ochsner et al., 2004).

Suppression. Expressive suppression is a concept based on the emotional knowledge of an individual, which comprises information for the causes of emotion, for their expressive behavior, physical sensations, and about the resources to adapt

them. Simply, by hiding a current emotional state suppression displays the act of covering facial indications. Individual's emotional experience can get affected by just hiding the expressions of face that escort specific emotions (Chris, Niedenthal, Marks, Brumbaugh, & Vicary, 2006). A research suggested that by suppressing the facial expressions linked with experience of pain the applicants can essentially decrease the pain experience (Kopel & Arkowitz, 1974). Though, (Chris et al., 2006) explains that it has diminutive approval that the emotional experience and physiological stimulation separately from the influence of the expressions related to pain could be decreased by the suppression of spontaneous emotional expression.

Gross and Levenson (1993) conducted a study in which participants viewed a revolting movie and were noticed by their expressions during suppression or no suppression, suppression created augmented blinking in participants. Though, there was a decreased heart rate in participants due to suppression and but it was not revealed by self-report that this disgust experience got effected by suppression or not. One research suggested that the experience related to positive emotions can be decreased by expressive suppression while experience of negative emotions does not successfully decreased by expressive suppression (Chris et al., 2006).

Specifically, in a study to fool a supposed audience the subjects were encouraged to minimize or exaggerate their facial expressions (Marinier & Laird, 2007). The participants covered up their inside experience in the presence of viewers. This idea could be the real cause that in different social conditions suppression is operated. In daily routine, suppression helps to ease social interaction and to adapt individual's surface presence to emotional norms according to a given condition. In this way, more successful social relationships could be maintained by hiding negative emotions, by avoiding conflicts, and also by shielding an individual from other people's negative sentences (Chris et al., 2006).

Labeling. The linguistic processing of the emotions that ascend in a specific condition is called labeling (Mikkelsen et al., 2007). Labeling is different from appraisal in the sense that appraisal is an automatic and general processing of various aspects of a situation (novelty, relevance) and it includes a basic evaluation of emotional aspects in order to execute an adaptive emotional response (Brosch & Sander, 2013). Labeling, on the other hand, relates specifically to the emotional aspect

of the situation and involves an explicit verbal process of identifying and naming the emotion (Mikkelsen et al., 2007). According to some researches labeling, which is similar to distraction and reappraisal, consequently shows increased stimulation in prefrontal areas, and Broca's area, but decreased stimulation in the amygdala (Hariri et al., 2000; Mikkelsen et al., 2007; Tupak et al., 2014). One research presented that an individual's labeling of his/her facial emotions involved increased stimulation in the right ventral prefrontal cortex and decreased stimulation in the amygdala in comparison through a control condition challenging corresponding facial stimuli with emotional expressions. As with the brain initiation of handling diverse characteristics of emotional stimuli (by matching a facial expression) is deficient to normalize the amygdala, this finding suggests that this pattern of brain activation has a unique impact on labeling (Hariri et al., 2000). Different studies replicated the findings concerning the form of brain stimulation throughout labeling (Gorno-Tempini & Price, 2001; Narumoto et al., 2000) and suggesting that activation in amygdala could be controlled by the linguistic dispensation of emotions (but not other, non-emotional properties of stimuli).

Individual differences in emotional regulation. There are several distinctive associations with cognitions, emotional experience, relationships, and wellbeing shown by individual variances in the typical use of reappraisal and suppression. For instance, typical practice of suppression is positively linked with depression and practice of reappraisal is negatively linked with depression (Gross & John, 2003). Habitual use of reappraisal is negatively correlated with negative emotions and positively correlated with positive emotions. Consequently, adaptive, habitual use of cognitive reappraisals can offer numerous benefits. The individual's emotional regulation efforts can also get affected by the beliefs an individual holds about emotions. For instance, an individual who believes that emotions cannot be altered because they are fixed there is likelihood that his own emotions will get affected by his beliefs as well. If the individual has no reason to think that regulatory strategies would be effective, it is improbable for oneself to spend energy executing them. In contrast, peoples who believe that emotions can be altered and are not fixed should have high levels of emotion regulation efficacy.

This prophecy can be positively functional to cognitive reappraisal. The effects related to people's beliefs about emotions and regulation of emotion on strategies they used to regulate emotions has been studied. Individuals who reported active modification of their emotions by using reappraisals were more likely to view emotion as more flexible but certain regulation strategies may not replicate fixed or unchallengeable traits relatively this habitualization may be subtle to development of individual and socially desirable. Precisely, it has been recommended that the amount of control people have on their emotions get affected by belief system about the pliability of personal characteristics. Individuals who hold entity beliefs and thinks that peoples have little control over their emotions view attribution as relatively fixed, in contrast the individuals who holds incremental beliefs and thinks that people can change the emotions if they want to view emotions as flexible and controllable (Sheppes, Scheibe, Suri, & Gross, 2011).

Theoretical Background

Theoretical background for emotional regulation is explained below.

Process model. Process Model presented by Gross (1998) suggests that emotions describe as a multi-componential process, in which an external/internal situation occurs then it is attended to, giving upsurge to an appraisal of the situation's valence and motivational significance, which results in a sequence of observed, behavioral, and neurophysiological response changes. Environment sometimes interacts with the responses and lead to variations in the situation that formed the primary response, resultant in a recursive ring that produces new emotional responses. At these different stages of emotion proactive processes are in operation to devise a number of strategies to regulate negative and positive emotions that can be importantly useful. These strategies of emotional regulation can be categorized into those that are response-focused that includes response modulation and antecedent-focused which includes situation selection, situation modification, attentional deployment, and cognitive change.

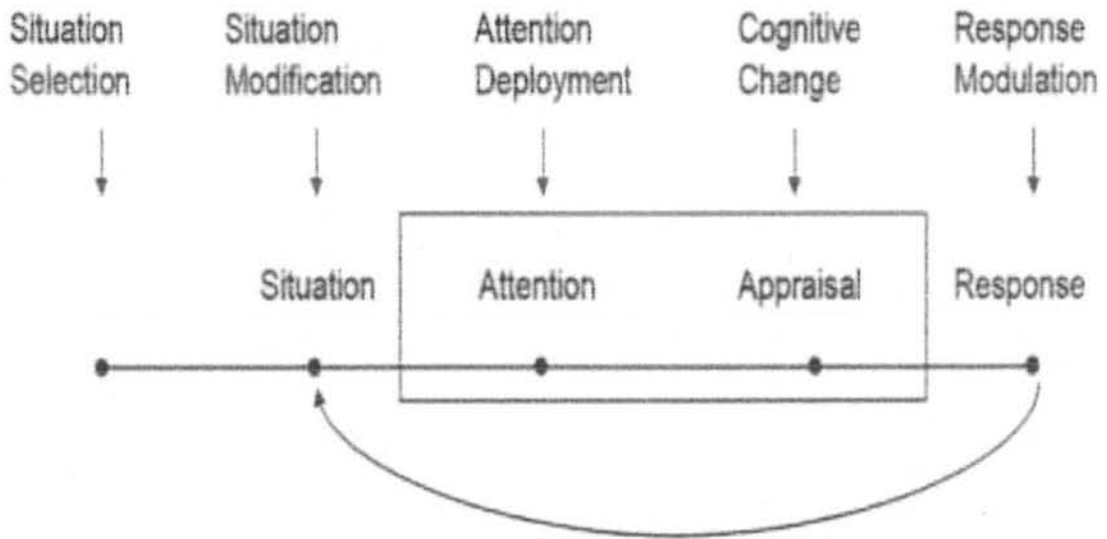


Figure 1. The process model of emotional regulation

Gross (1998) for instance, distinguished the key strategies that reinforce explicit emotion regulation. Precisely, in this model of emotion regulation, during the generation of emotions Gross divided a sequence of steps. Then strategies were categorized and that how individuals can use them at each step to regulate their emotions. Firstly, an individual can make choice in which conditions he/she select to join and can adapt these situations. Secondly, in these situations attention can be shifted to an explicit objects and inattention to other stimuli. Thirdly, appraisals of some situation can be modified by an individual, which reflects his/her capacities to solve a problem or upon the unrecognized benefits of some problem, for instance, called cognitive change. Finally, reactions to these events can be selected and modulated by the individual, for example, to have control on expression of emotions, devour medications, or contrivance relaxation exercises can be used.

Gross and John (2003) separated these strategies into two main categories. The first is antecedent focused, which involves assortment and modification of conditions as well as attention arrangement and cognitive adjustment. These strategies are initiated before the stimulation of emotion. Cognitive reappraisal of an event is a typical example. Response focused is the second category, which involves selection of reactions and modulation. A typical example of response focused is expression suppression.

Gender Difference in Emotional Regulation

Some research studies provide evidence that gender differences in regulating emotions exists. One study suggested that motives behind regulating emotions are different between men and women. In regulating emotions women are more apprehensive with getting along while men express authoritative emotions like, anger or pride and are more motivated to stay in control (Timmers, Fischer, & Manstead, 1998). Another study also deliberated that how females are good in managing emotions at home as well as at work. Females can manage emotions effectively (so performance supposed to be better), if engage in more emotion management conditions, perhaps they mostly engaged in hiding of true feelings so stress would be higher (Wharton & Erickson, 1993).

Additionally one research study investigated neural basis of emotional regulation regarding gender differences where females as compare to males, showed (a) lesser upsurges in prefrontal regions that are related with reappraisal, (b) greater decreases in the amygdala, which is associated with emotional responding, and (c) lesser engagement of ventral striatal regions, which are associated with reward processing. Male expends less effort while using cognitive regulation, perhaps due to greater use of automatic emotional regulation. Female use positive emotions in the service of reappraising negative emotions to a greater degree. Findings of these researches demonstrate that females are good in regulating emotions as compare to male (McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008).

Mindfulness

Sati is the Buddhist term for mindfulness which can be translated as awareness though the exact meaning of the word is simply recollection or memory (Sanghrakshita, 1999). The single-minded and clear awareness of what is really happening inside and outside of an individual at the consecutive moments of perception and as keeping one's consciousness alive to the present reality (Brown & Ryan, 2003). Mindfulness also has been defined as consciousness that ascends with giving attention in a specific way to the current situation and nonjudgmentally to the explaining of experience by every second (Kabat-Zinn, 2003).

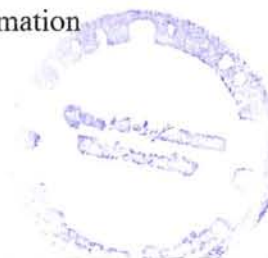
Mindfulness means preserving a moment-by-moment awareness of our feelings, thoughts, bodily sensations, and surrounding environment. Studies described that youth can get benefit by learning mindfulness in terms of enhanced wellbeing, cognitive outcomes, and social-emotional skills. In turn, long-term improvements in life can be taken by such benefits. For example, improved education, employment, crime, substance abuse, and mental health outcomes in adulthood could be predictable by social skills in kindergarten (Murray et al., 2015).

Teachers after learning mindfulness, could not just gain subjective benefits such as decreased stress and burnout but also their schools worked well (Flook, Goldberg, Pinger, Bonus, & Davidson, 2013). Based on independent observation after learning mindfulness in randomized controlled trials, teachers reported greater efficacy in doing their jobs and improved organization of classrooms and had classrooms that are emotionally more helpful (Flook et al., 2013; Murray et al., 2015). A pilot study conducted by Liehr and Diaz (2010) suggested that depressive symptoms among minority children could be reduced by Mindful-Schools Elementary-Grades Curriculum. The mindfulness group showed meaningfully decreased depressive symptoms in comparison to control group. Results demonstrated possibility for the practice of mindfulness to decrease common depressive symptoms in minority children. The researchers also acclaimed the Mindful Schools Curriculum, noticing that children engaged completely in the activities of the curriculum.

Theoretical Background

Here are some theories based on mindfulness.

Mindfulness Theory. This theory discourses situational consciousness in the current moment. This theory stalks through associating the skills that gives the understanding of a situation by keeping an open mind to alternative perspectives and categories (Carson & Langer, 2006). For example, it would be difficult to see the whole situation due to mindlessness, automatic behavior, and functioning by singular perspective, and subsequently which influence performance and also the relationships because noticing just one side of information could make it problematic due to ignoring other sides which may be more important (Burgoon, Berger, & Waldron, 2000). Though, mindfulness permits individual to be more alert towards information



by supportive clearer thoughts and behaviors along with reduction of stress, better performance, and decision-making (Demick, 2000; Perkins, Tishman, Ritchhart, Donis, & Andrade, 2000). Additionally, a greater association exists that how decision making get effected by mindfulness, awareness, and context (Langer & Moldoveanu, 2000).

Mindfulness versus Mindlessness. Responding of an individual with an open mind and decision process gets affected by the automatic behavior of mindlessness. Due to mindlessness the mind gets closed to understated upcoming information that could make great discrepancy in making decisions through bigger context. For example, individual's automatic behavior and his/her way of functioning from a certain angle can avert an individual from making decision actively that whether a perception or behavior is really fitting in the present situation, just because it was fit for similar condition in the past (Langer, Pirson, & Delizonna, 2010).

Besides this, mindfulness permits an individual to uncover new chances that could help him reexamine previous topics to make better decisions. It has been explained that when we make even small efforts to be more mindful, drawing new distinctions in our daily experiences, we become more interested in what we are doing and our performance improves, and this is supposed to affect our daily decisions (Langer et al., 2010).

Mindfulness State and Trait. Psychologically mindfulness could be reflected either as a trait or a state. Mindfulness as state, defines behavior in a specific situation, while mindfulness as trait, is a propensity of thinking and behaving in a mindful way (Langer et al., 2010). The one side is to act in and according to a state though the other relays to the logical nature of evaluating decision. Amalgamation of both of them could be used to relate it with making decision and thought conflict. Consequently, mindfulness as state and more precisely as trait could encourage open mindsets to improve decision making, in the generation of substitutive perspectives, and decrease cognitive dissonance that cause burnout and stress.

Individual shifts to a mindful state in the presence of certain conditions, like when consequences vary from expected outcomes, because old automatic behavior becomes no longer operative one is possibly to move into a mindful situation for

processing the upcoming information. When involuntary behavior gets affected by different situational factors, an individual starts to make a new or suitable set of behaviors for mindless routine or mindfully creates a new solution. It has more possibility to attend the surroundings with attention to details, a distress for circumstantial signals in conditions which require more effort to analyze and respond (Langer et al., 2010).

Context and Mindfulness. Circumstantial awareness and social comparisons, that are tangled with performance, self-acceptance, and stress gets affected by mindfulness (Carson & Langer, 2006; Demick, 2000; Langer et al., 2010) Generally, as an individual becomes more mindful about self and performance he/she also gets reduced effects of comparison. Additionally, one study has suggested that those who “don’t like to make comparisons” have more optimistic opinions about their performance in comparison to those who did or like to make social comparisons (Langer et al., 2010, p. 72). Thus, demonstrating that mindfulness can buffer the effects of social comparisons about performance, and give a clearer picture about self, thus also possibly reducing stress. Consequently, narrow categorization about self could also be expanded by mindfulness. This promotes self-acceptance, mindful decision making, purer consciousness of comparisons that influence stress and wellbeing (Carson & Langer, 2006).

The Mindful Coping Model. The mindful coping model is one of the several proposed mechanism to describe the effects of mindfulness (Garland, Gaylord, & Fredrickson, 2011). This model explains two ways for stress-reducing effects of mindfulness. The first process having a cross-sectional perspective, called mindful coping. This process explains that how individual appraises a stressful stimulus as challenge, threat, harm, or loss that one is not adept of dealing with. The individual may then use another more modified response called decentering, a process in which people distances them from the primary appraisal of stress. Then individual by ingoing to the state of mindfulness attends to the vigorous process of consciousness itself rather than its contents. Through this approach more information and possible explanation for the given situation could be taken into account as it increases attentional flexibility and broadens awareness.

Then this extended metacognitive awareness lead to a reappraisal of the stressful initial experience into a positive way. This new ascription can arise in both ways either through a more automatic process or a conscious process of reflection, based on impulsive intuition. The events that are reappraised then results in positive emotions for instance compassion, trust, confidence, and equanimity that cause reduced stress and affect following processes of appraisal. Trait mindfulness the second process, which has a longitudinal effect, could be achieved by mindful coping. This ability improves (consciously and sub-consciously) by frequently processing mindful coping through which trait mindfulness increases, which then decreases the influence of stressors through reappraising events positively.

Recent research supports this explanation too where findings suggest that state mindfulness i.e., the instantaneous experience of being mindful, ultimately leads to something more long-lasting and being more mindful in life, the so called trait mindfulness (Kiken, Garland, Bluth, Palsson, & Gaylord, 2015).

Enhancing mindfulness

Different training programs such as Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR) are used to increase mindfulness. These training programs are designed to enhance mindfulness and also for improving psychological wellbeing. As the name of training program infers, MBSR is particularly intended to benefit people effectively regulate the effects of stress on their psychological wellbeing.

In different studies MBSR training found to be highly effective for reducing stress and burnout-related symptoms in numerous settings and populations (Bishop, 2002; Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Collard, Avny, & Boniwell, 2008; Chiesa & Serretti, 2009; Irving, Dobkin, & Park, 2009; Khoury, Sharma, Rush, & Fournier, 2015; Proulx, 2003; Praissman, 2008). MBSR's link to useful wellbeing related outcomes, like the experience related to positive emotions, and determination in life has also been approved (Garland et al., 2011).

Mindfulness and Academic Outcomes

Attending to processes that broadly reinforce performance may increase success on cognitive tasks (Slagter et al., 2007). For example the incapability to maintain focus on a task without shifting attention to extraneous concerns, mind wandering has been related with reduced performance (Mrazek, Smallwood, & Schooler, 2012). Emerging research indicates that the relationship between mind wandering and mindfulness is oppositional, with higher levels of mindfulness being negatively related with mind wandering in undergraduate students. Finding demonstrates that even a brief (eight minute) mindful breathing session has been associated with reduced mind wandering suggests that focus and performance on task can be enhanced by mindfulness (Mrazek et al., 2012).

Additional support in relation to the mechanism of mind wandering has been indicated (Mrazek, Franklin, Phillips, Baird, & Schooler, 2013). Study demonstrating the benefits of mindfulness on measures of working memory capacity and reading comprehension. In this study, participants completed eight mindfulness sessions consist of forty-five minutes over a period of two weeks. However, mind wandering was found to mediate the benefits of mindfulness on performance for participants who have a base line tendency of mind wandering. Another mechanism through which mindfulness may increases academic outcomes is by reducing anxiety. Negative anxieties have been associated with decreased academic performance (Chapel et al., 2005; Cunha & Paiva, 2012; Seipp, 1991).

Burnout

Burnout has been explained as a corrosion of commitment, something that was initiated as challenging and significant work becomes meaningless, hostile, and unrewarding. Burnout an English term has the meaning of termination of something because of reduced potency. Commonly, it could also mean to be disbursed by too much drug use. Metaphorically, it is something that has been touched to its ending due to reduced vitality (Maslach, Schaufeli, & Leiter, 2001). The term burnout was first used in a case study 'Miss Jones' (Schwartz & Will, 1953), in which illness related to work was explained. In 1970s, firstly it was characterized as Burnout Syndrome. Symptoms of burnout include vague clinical indicators such as headache

and emotional instability, fatigue, somnolence, and eating disorders (Leiter & Schaufeli, 1996).

A condition of physical and mental exhaustion associated with work is called burnout. Burnout could be caused by the sufferings in the duration of medical school with significant consequences, particularly if burnout continues into residency and beyond. It has long been a cause of concern for mental health of the students in medical studies. Excessive task overload, stressful timetables, and also devotion becomes exhausted due to challenging duties to learn about and care for patients and become possible activator or simultaneous reasons of emotional distress. An incongruity in doctors' and students' stability and can be a reason for significant psychological variations that are mirrored in depression, drug use, occupational dysfunction, and suicide (Dedovic, Aguiar, & Pruessner, 2009). The number of studies related to burnout has been improved dramatically and the study of burnout has been extended to almost every job and even to non- occupational samples, for instance students (Chang, Rand, & Strunk, 2000; Schaufeli, Salanova, Gonz lez-Rom n, & Bakker, 2002; Yang, 2004).

Yang (2004) define student burnout that students in the learning process exhibit a state of emotional exhaustion, a propensity to depersonalization, and a feeling of low personal accomplishment because of course stress, course load, or other psychological factors. Accordingly, they become engaged in structured, forced activities (attending classes, completing assignments) that are focused to a specific goal like passing exams. Therefore, burnout being related to work may also exist in students, where it displays itself as feeling exhausted because of study stresses, having a cynical and disconnected attitude towards one's study and feeling incompetent as a student (Pretty, McCarthy, & Catano, 1992; Meier & Schmeck, 1985). Moreover, several studies on stress in academic life have considered students as a kind of employee as well (Chambel & Curren, 2005).

Pines, Aronson, and Kafry, (1981) studied burnout in nurses, counselors, educators, and undergraduate students and found that students rated in the middle to upper levels of the burnout measures. This specifies that students experience some degree of burnout during their learning period. Previous researches founded that the syndrome of student burnout is analogous to that in service employees. Student

burnout can lead to, lower motivation to do required course work, higher absenteeism, higher percentage dropout (Meier & Schmeck, 1985; Ramist, 1981).

Currently burnout syndrome has been one of the most widely debated mental health problems in modern societies. In a world that faces major socioeconomic challenges, people experience ever increasing pressure in their daily lives, particularly at the workplace. Consequence, managers and workers in a variety of industries and sectors around the world suffer from work-related stress, fatigue, and exhaustion, the most prominent signs of which are often referred to as Burnout Syndrome (Ahola, Väänänen, Koskinen, Kouvonen, & Shirom, 2010; Langelaan, Bakker, Schaufeli, Rhenen, & Doornen, 2006).

Dimensions of Burnout

Followings are the three dimensions of burnout.

Exhaustion. One out of three phases of burnout, exhaustion is the most commonly described and the most comprehensively inspected. People are most often stating to the experience of exhaustion, when they label themselves or others as suffering burnout. However it flops to capture the extreme features of the association people have to their work though overtiredness reflects the stress dimension of burnout. Exhaustion is not a process that can be simply experienced rather it stimulates movements to detach one cognitively and emotionally from his/her work, outwardly as a way to cope with the excessive work. The emotional demands of the work can exhaust a job holder's capacity to deal with and be responsive to the needs of customer (Maslach, Schaufeli, & Leiter, 2001).

Depersonalization. In depersonalization the person attempts to make space between oneself and the individual by vigorously avoiding the abilities that make them matchless and pleasing individuals. When they are deliberated as detached objects of an individual's work their demands becomes more controllable. People who did not work inside of the human services use thought estrangement by emerging cynical or an insignificant attitude during exhaustion. Distancing is an immediate reaction to exhaustion. Burnout researches found a strong and consistent association from exhaustion to cynicism through depersonalization, across a wide variety of occupational and organizational settings (Maslach, Schaufeli, & Leiter, 2001).

Inefficacy. The relationship of other two dimensions of burnout with inefficacy (reduced personal accomplishment) is rather extra difficult. For some occasions it seems to be a function, to some point, of exhaustion, cynicism, or an amalgamation both (Byrne, 1994; Lee & Ashforth, 1996). Demands related to chronic overwhelming work condition contribute to cynicism or exhaustion is probable to erode one's sense of efficacy.

Additionally, effectiveness gets affected either by exhaustion or depersonalization. When an individual is indifferent to others or exhaustion feelings then it becomes difficult for him/her to gain sense of accomplishment. Though, in other occupational settings, inefficacy seems to progress in equivalent with the other two aspects of burnout, rather than in sequence (Leiter, 1993). The deficiency of pertinent resources cause decreased efficacy, whereas work overload and social conflicts cause exhaustion and cynicism (Maslach, Schaufeli, & Leiter, 2001).

Factors Effecting Burnout among Medical Students

A response, which may be unsuitable, to chronic emotional and interpersonal stressors in the workplace is called burnout. It can be functional to individuals who participate in activities that are psychologically similar to workplace, such as students (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). Burnout Syndrome among students has the following three dimensions: 1) emotional exhaustion (due to educational demands), 2) cynicism (indifference/apathetic attitude toward academic activities), 3) low professional efficacy (perception of incompetence as a student) (Carlotto & Câmara, 2006).

Researchers have described stressful/demanding moments in the academic life of medical students and medical training considered to have high psychological toxicity (Aguiar, Vieira, Vieira, Aguiar, & Nóbrega, 2009). Different factors that cause significant stress among students in medical studies follow a traditional model which includes competitive entrance exams, the expectations of freshmen who want immediate contact with specific medical disciplines, and adaptation problems at the start of coursework. The transition from the introductory medical study to the practical field presents another occasion for intense anxiety, uncertainty, expectations, and fears caused by the feeling of limitations regarding the scientific knowledge their

changes from one stage to another and the direct contact with seriously ill people who have hopeless prognoses. The disproportionate workload and educational content, combined with the high level of educational burdens, a lack of time for leisure, family and friends, studying for residency exams, the choice of a specialty and the delayed income also contribute to stress among medical students (Tarnowski & Carlotto, 2007). In addition to these aspects, personality traits inherent to medical students include obsessiveness, perfectionism, and self-exigency (Millan et al., 2005).

These factors are potentially accountable for the high prevalence of suicide, depression, stress, use of psychoactive substances, marital problems, burnout, and professional dysfunction in doctors and medical students. Earlier studies on Burnout Syndrome in medical students have reported prevalence from 10% to over 45% (Dyrbye et al., 2008). This large inconsistency reflects the use of several criteria by researchers for the diagnosis of the syndrome, such as bi-dimensionality and the use of nonspecific instruments with students (Dyrbye et al., 2006). Mental disorders among medical students have been stated more recurrently in recent years, although few studies have described Burnout Syndrome (Aguiar et al., 2009) which has been well researched among physicians and residents and is believed to be influenced by adverse conditions in medical school training (Carlotto & Câmara, 2006).

Theoretical Background

Some models based on burnout are described below.

Maslach Model of burnout. Maslach (1982) suggested that the main reason behind the process of burnout is emotional exhaustion, in reaction to chronic stress due to work that drains the emotional resources of workers. As a strategy to cope with emotional exhaustion, people depersonalize their relations with others and detach themselves psychologically. After the occurrence of depersonalization peoples start to identify an incongruity between their present condition and expectations related to potential contributions by employers, which then leads to inadequacy that result in lower self-evaluations of personal accomplishment.

Consequently, Maslach represents emotional exhaustion as precursor of depersonalization, and depersonalization as precursor of reduced personal accomplishment. This model explains that through the mediating variable

depersonalization, feelings of reduced personal accomplishment are caused by emotional exhaustion.

Golembiewski Model. This model describes that the process of burnout starts when functional detachment, which is essential in some occupations (social services, health care), provides means to dysfunctional depersonalization. Then performance related to job gets interfered by depersonalization, which then affects one's assessment of personal accomplishment. Lastly, reduced personal accomplishment leads to depersonalization eventually end in emotional exhaustion in chronic situations.

Therefore, Golembiewski models reduced personal accomplishment as a predecessor to emotional exhaustion and depersonalization as predecessor to diminished personal accomplishment (Golembiewski & Munzenrider, 1981; Golembiewski & Munzenrider, 1984).

Mindfulness and Burnout

Throughout the medical training students gets affected by psychological stressors that if remains persistent can cause burnout syndrome (Tarnowski & Carlotto, 2007). A study found that burnout is significantly prevalent among the medical students (Costa, Santos, Santos, Melo, & Andrade, 2012). Students who reported more burnout were more likely to have considered past suicidal ideation (Dyrbye et al., 2008). Results of recent studies have shown that in the duration of medical school, between 7.8 and 11 % of medical students reported to have suicidal ideation (Rubin, 2014). A study suggested that medical students reports higher levels of anxiety and depression and perceived stress. Generally medical students' have high levels of perceived stress and emotional distress, with particular resources acting as a buffer (Heinen, Bullinger, & Kocalevent, 2017).

A study based on large population has suggested that the training of mindfulness is associated strongly with perceived health and better wellbeing (Carmody & Baer, 2008). According to some researches both worry and rumination promotes mental illnesses such as anxiety and depression (Querstret & Cropley, 2013). It has also been shown that both rumination and worry can be reduced

effectively through mindfulness-based interventions (Gu, Strauss, Bond, & Cavanagh, 2015). Research (mindfulness based intervention for primary school teachers) suggested that protection against burnout could be taken by increasing mindfulness (Roeser et al., 2013). Results of the study suggest that through mindfulness not just negative symptoms of burnout could be reduced but also the personal resources of work engagement could be strengthened (Hülshager, Alberts, Feinholdt, & Lang, 2013; Leroy, Anseel, Dimitrova, & Sels, 2013). It has been examined about mindfulness that it decreases exhaustion of emotions and increases satisfaction with job. According to the results, applicants in the mindfulness intervention group practiced meaningfully more satisfaction with job and decreased emotional exhaustion than control group subjects (Dane & Brummel, 2014).

Mindfulness-Based Interventions (MBIs) are the modern programmatic packaging of mindfulness meditation, that is representing a rapid growing area of medical practice and research that can possibly help both client and as well as physician (Black, 2014; Cullen, 2011; Epstein, 1999; Holzel et al., 2011; Ludwig & Kabat-Zinn, 2008). One research (Rosenzweig, Reibel, Greeson, Brainard, & Hojat, 2003) found that stress and anxiety in senior medical students could be reduced by the practice of mindfulness. Findings of the literature supported the relationship between burnout and mindfulness.

Emotional Regulation and Mindfulness

Rumination is a non-adoptive strategy of emotional regulation in relation to mindfulness. It is defined as a coping process in which an individual continually and inactively do emphasizes on the negative feature of a stressful event comparatively, to the present-moment awareness of mindfulness (Brown, Ryan, & Creswell, 2007; Nolen-Hoeksema et al., 2008). It has been found that the relationship between reduced stress symptoms and mindfulness could be partially mediated by reduction in rumination (Coffey, Hartman, & Fredrickson, 2010). This suggests that an individual who is less mindful have a predisposition to focus on negative emotions, while individual who is more mindful becomes more aware of but less emotionally involved to, the thoughts and has less chances to dwell on negative emotions.

Likewise the relationship between mindfulness and reduced symptoms of anxiety disorders have been seen to be mediated by decreased rumination (Desrosiers, Vine, Klemanski, & Nolen-Hoeksema, 2013). These findings demonstrate that mindfulness increases cognitive emotional regulation capacities by reducing maladaptive strategies such as rumination and replacing these with adaptive strategies such as positive reappraisal. The brain can be reprogramed to be less emotional and more rational through mindfulness. Meditators when engaged in decision making, showed augmented action in the posterior insula of the brain, which is related to rational decision making. This permits peoples to make decisions on the basis of facts than emotions (Chadwick et al., 2008).

It has been suggested that the relationship between trait mindfulness and burnout in standardized patients could be mediated by positive reappraisal. Findings recommended that higher use of positive appraisal plays a moderate role in the association between reduced burnout and mindfulness. It has been argued that emotional regulation mediates the effects of mindfulness on burnout as mindfulness is related with increased adaptive emotional regulation and with reduced burnout (Gerzina & Porfeli, 2012). Another study has also found that emotional regulation mediate the relationship between mindfulness and psychological symptoms like anxiety, depression, and stress (Chambers, Gullone, & Allen, 2009).

Emotional Regulation and Burnout

The link between the study variables has been endorsed by researches that emotional regulation and burnout has been associated. One research study found that maladaptive thinking including negative self-evaluation and self-doubt increases the probability of burnout, contributing through its role in averting individuals from rational thinking (Evers, Tomic, & Brouwers, 2004). Additionally, a study examined the relationship between teacher's emotional exhaustion and emotional regulation proposed that different strategies for regulating emotions, cognitive reappraisals, and expressive suppression effects the experience of emotional exhaustion directly which is associated with burnout. Low level of emotional exhaustion has similarly been reported by teachers when mainly using cognitive reappraisals and high level of emotional exhaustion when using expressive suppression as a strategy for regulating emotions (Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010).

Emotional Regulation, Mindfulness and Burnout

One study found the relationship between trait mindfulness and burnout could be mediated by positive reappraisal. According to the results both positive reappraisal and mindfulness regarded for 31% of variance in burnout among standardized patients (Gerzina & Porfeli, 2012). Findings of this research suggested that by using more positive appraisal, the relationship between mindfulness and reduced burnout could be moderated.

Another study investigated the role of surface acting, which is a strategy for regulating emotions where an individual suppresses his/her real emotion and fakes environmentally expected emotion by displaying the rules of one's occupation, in the relationship between emotional exhaustion which is the dimension of burnout and mindfulness. Results of the study suggested that the effect of increased mindfulness on the reduction of emotional exhaustion could be partially mediated by the reductions in surface acting (Hülshager et al., 2013). The above discussion shows that the association between emotional regulation and mindfulness signify that mindfulness might mediate the relationship between emotional regulation and mindfulness.

Rationale

Burnout is a state of persistent psychological and physical exhaustion, and a generally known phenomenon. Burnout is experienced by almost every medical student due to highly challenging medical education. It has been seen as a dominant feature among medical students of Lahore, Pakistan (Muzafar et al., 2015). Researchers found an extreme occurrence of stress related to academics and poor sleep quality among medical students. Stressors that are related to studies subsidized significantly to sleep disorders and stress in medical students (Waqas, Khan, Sharif, Khalid, & Ali, 2015).

In the academic life of medical students, various stressful situations have been defined and also medical training is reflected as a psychological harmfulness. Constantly medical students remains unprotected to psychosocial stressors in the

duration of training that if encountered consistently can lead to Burnout Syndrome (Tarnowski & Carlotto, 2007).

One research study (Santen, Holt, Kemp, & Hemphill, 2010) has shown that burnout progresses gradually over the development of medical education. Occupational behavior also gets affected through burnout, which eventually disturbs patient care. Another study showed that while facing a demanding condition most of the medical students reported indecision and they typically used elusive strategies for handling emotional influence of the occurrence. Study demonstrates that medical students most commonly stated emotions of surprise and shock shadowed by feelings of sadness, anger, tension/anxiety, and embarrassment. Students practice different regulation strategies which involve concentrating and comforting the patient, when they observed maltreatment or disrepute displayed to patients (Doulougeri, Panagopoulou, & Montgomery, 2016). Mindfulness is nowadays a putative technique for decreasing stress in Western culture with the basis in eastern meditation. After having a review of assessing interventions a current Cochrane found Cognitive Behavioral Training and relaxation can reduce stress in healthcare workers but additionally there is a need to research (Liira, Verbeek, & Ruotsalainen, 2015). Emotionally penetrating duration of medical training can be demanding for medical students. There has been great deal of research with medical students, however the habitual use of two main strategies for regulating emotions experienced by medical students in the face of challenging situations and the use of mindfulness for reducing burnout remains relatively unexplored.

As compare to general population, there is a large body of work observing depression, anxiety, and stress among medical students (Aktekin et al., 2001; Dyrbye, Thomas, & Shanafelt, 2006). The aim of the present study is to explore the mediating role of mindfulness between emotion regulation and burnout among medical students. The literature provides some evidence that the practice of mindfulness reduced the level of stress and anxiety in senior medical students (Ruscheweyh et al., 2011). Several researches exists in the range of work relate burnout, specifically on teacher burnout, amongst nurses, doctors, and managers etc. However, limited researches were done to explore academic burnout among students (Rahmati, 2015). There is a gap in psychological literature to look for mediating role of mindfulness for emotional



regulation and burnout among medical students. This research can help medical educators to understand the useful skills for burnout.

Emotional regulation a set of skills linked to emotional information and the dispensation of emotions is called emotional regulation (Mayer et al., 2008). Assessing mindfulness and regulation of emotions is important for medical students to examine their overall ability to deal with their immediate world since they may have to confront a great deal of stressful situations in their profession. Research also indicated that medical students become more prone to emotional disorders and emotional disorders have significant association with social relations, social skills of individual, also the level of anxiety and pressure before exam. Timely unfolding of this is vital to avert psychological problem and its unwelcomed influences on medical students (Zaid, Chan, & Ho, 2007).

Method

Method

Objectives

Following are objectives of current study:

1. To study the mediating role of mindfulness for emotional regulation, and burnout among medical students.
2. To explore the role of different demographic variables (age, gender, college sector, year of medical studies, student status, family income and marital status) among medical students.

Hypotheses

Following are hypothesis of current study:

1. Cognitive reappraisal will be positively related to mindfulness among medical students.
2. Expressive suppression will be negatively related to mindfulness among medical students.
3. Cognitive reappraisal and mindfulness will be negatively related to burnout among medical students.
4. Expressive suppression will be positively related to burnout among medical students.
5. Mindfulness will mediate the relationship between cognitive reappraisal and burnout among medical students.
6. Mindfulness will mediate the relationship between expressive suppression and burnout among medical students.
7. Female medical students will score high on cognitive reappraisal and male medical students will score high on expressive suppression.
8. Medical students of public sector colleges will report more burnout as compare to medical students of private sector colleges.
9. Day-scholar medical students will report more burnout as compared to hostelite medical students.

10. Students in later years of medical studies will report more burnout as compared to the students of initial years of medical studies.

Operational Definitions

Operational definitions of study variables are described below.

Emotional regulation. Emotional regulation is defined as a process that facilitates the monitoring, evaluating, and modifying the strength of an emotion. It is respondent's tendency to regulate their emotions in two ways: (1) Cognitive Reappraisal and (2) Expressive suppression (Gross & John, 2003).

Cognitive reappraisal. Cognitive reappraisal is an antecedent cognitive strategy which involves reappraisal of future or present situations which changes the emotional impact. It includes modifying the way an individual thinks about a situation or the emotion, to regulate its impact (Gross & John, 2003).

Expressive suppression. Expressive suppression is a response-focused strategy which involves restriction of behavioral reactions or emotional expressions to any situation and they are not shown to others. It includes inhibiting external facial, bodily, or behavioral signs of the emotion (Gross & John, 2003).

In the present study Emotional regulation, Cognitive reappraisal, and Expressive suppression were operationalized through scores obtained on Emotion Regulation Questionnaire, Subscales score on Cognitive reappraisal, and Expressive suppression respectively (Gross & John, 2003). High score on Cognitive reappraisal and Expressive suppression indicates greater tendency to use Cognitive reappraisal, and Expressive suppression strategies for emotion regulation and low scores indicate lower tendency to use Cognitive reappraisal and Expressive suppression for emotion regulation.

Mindfulness. The single-minded and clear awareness of what is really happening inside and outside of an individual at the consecutive moments of perception (Brown & Ryan, 2003).

In the present study mindfulness was operationalized through scores obtained on Mindful Attention Awareness Scale (Brown & Ryan, 2003). High score indicates more mindfulness and low scores indicates low mindfulness.

Burnout. Burnout is defined as a corrosion of commitment, that what was initiated as challenging and significant work becomes meaningless, hostile, and unrewarding (Maslach, Schaufeli, & Leiter, 2001).

In the present study burnout was operationalized through scores obtained on Maslach Burnout Inventory Student Survey (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). It measures following three components.

Emotional exhaustion. The emotional strains of the work can exhaust an individual's aptitude to contract with, and responsive to, the needs of another person (Maslach, Schaufeli, & Leiter, 2001).

Cynicism/Depersonalization. Cynicism is a detached attitude toward the job or work. Excessive detachment, or depersonalization, could impair performance (Maslach, Schaufeli, & Leiter, 2001).

Academic Efficacy. Academic efficacy states an individual's belief that he/she can efficaciously accomplish at a designated level on an academic task or achieve a specific academic goal (Linnenbrink & Pintrich, 2002).

In the present study Burnout, Emotional exhaustion, Cynicism, and Academic efficacy were operationalized through scores obtained on Maslach Burnout Inventory Student Survey, subscales score on Emotional exhaustion, Cynicism/Depersonalization, and Academic efficacy respectively (Schaufeli et al., 2002). High scores indicate more Burnout, Emotional exhaustion, Cynicism and Academic efficacy but low scores indicate less Burnout, Emotional exhaustion, Cynicism and Academic efficacy.

Instruments

A brief description of the three scales used to measure the variables in the present study has been given.

Emotion Regulation Questionnaire (ERQ). The Emotion regulation questionnaire (Gross & John, 2003) has been used to assess individual differences in the habitual use of two emotional regulation strategies including Cognitive reappraisal (CR) and Expressive suppression (ES). This scale has 10 items and has two subscales namely Cognitive Reappraisal include items 1, 3, 5, 7, 8, 10 and Expressive suppression include items 2, 4, 6, 9. It is a 7 point Likert type scale. The measure has no reverse item. Being a multi-dimensional scale there is no composite score for the scale and scoring for each subscale is done separately. The scoring system for each item is 1 = strongly disagree, 4 = neutral, and 7 = strongly agree (see Appendix-C). All ten items are then added and giving a maximum possible score of 70 and a minimum of 10. The scale has shown good internal consistency.79 for the Cognitive Reappraisal scale and .76 for the Expressive Suppression Scale (Gross & John, 2003). The scale is used with the permission of author (see Appendix-C).

Mindful Attention Awareness Scale. It is developed by Brown and Ryan (2003). The trait MAAS is a 15-item scale designed to assess a core characteristic of mindfulness. The response categories for each item is 1 = Almost Always, 2 = Very Frequently, 3 = Somewhat Frequently, 4 = Somewhat Infrequently, 5 = Very Infrequently, 6 = Almost Never (see Appendix-D). The measure has no reverse item and no subscale. It takes 5 minutes or less to complete. Scoring is done by adding scores on all items. The scale has shown good internal consistency levels (Cronbach's alphas) generally range from .80 to .90 (Brown & Ryan, 2003). The scale is used with the permission of author (see Appendix-D).

Maslach Burnout Inventory Student Survey. MBISS is developed by Schaufeli et al. (2002). It contains 16 items and has three subscales namely Emotional exhaustion includes item number 1, 2, 3, 4, and 6, Cynicism includes item number 8, 9, 13, 14, and 15, and Academic efficacy includes items 5, 7, 10, 11, 12, and 16. All items were answered on a 7 point Likert scale of 0 to 6 (0 = Never had this feeling, 1 = A few times a year or less, 2 = Once a month or less, 3 = A few times a month, 4 = Once a week, 5 = A few times a week, 6 = Every day (see Appendix-E). Scoring is done by adding scores on all items for both overall scale and the subscale. The subscale Academic efficacy has 6 items and all should be reversed before total score is obtained. Alpha coefficients for the scale was .75 and for subscales Emotional

exhaustion, Cynicism, and Academic efficacy were .83, .79, and .81 respectively (Ilic, Todorovic, Jovanovic, & Ilic, 2017). The scale is used with the permission (see Appendix-E)

Research Design

The present study used a cross-sectional research design with a correlational framework and analyses were quantitative in nature.

Sample

There were 257 medical students who participated in this research. Sample was taken from different public (Army Medical College and Rawalpindi Medical College) and private medical colleges (Islamabad Medical and Dental College) of Islamabad and Rawalpindi. Both male and female students were included with age range 18-25 years ($M = 21.2$; $SD = 1.49$). To explore various important demographic variables e.g., age, gender, college sector, year of medical education, student status, family income, and marital status a comprehensive demographic sheet was devised (see Appendix-B). Detailed demographic description of sample is given below.

Table 1

Frequencies and Percentage of Sample along Demographic Variables (N = 257)

Demographics	<i>f</i>	%
Age		
(18-21)	155	60.3
(22-25)	102	39.7
Gender		
Male	106	41.2
Female	151	58.8
College		
Public	191	74.3
Private	66	25.7
Year of Medical Studies		
First year	42	16.3

Continued...

Second year	24	9.3
Third year	111	43.2
Forth year	60	23.3
Fifth year	20	7.8
Student Status		
Day scholar	158	61.5
Hostelite	99	38.5
Family Income (Monthly)		
Low income group (40,000-100000)	132	51.4
High income group (110,000-700000)	125	48.6
Marital Status		
Single	252	98.1
Married	5	1.9

Table 1 is showing frequency distribution for the various demographic variables catered in the study. These variables include age, gender, and college sector, year of medical studies, student status, family income, and marital status.

Procedure

Participants of the study were approached at their respective institutes (see Page. no. 30). For the purpose of data collection permission was taken from higher authorities of institutes. An informed consent form of detailed information about voluntary nature of participants, right to quit at any time, anonymity, and confidentiality of data was provided. It was assured that the information provided by the participants would be reserved off the record and will only be used for the purpose of research (see Appendix-A). After providing verbal instructions, participants were asked to fill demographic sheet along with instruments measuring study variables. On average participants took 10-15 minutes for filling questionnaire. At the end participants and institution authorities were thanked for their cooperation.

Results

Results

This chapter covers the results of current study where focus was on the role of emotional regulation and mindfulness on burnout among medical students. Data was analyzed using Statistical Package for Social Sciences (SPSS 21.0 for Windows) for quantitative analysis. This study is based on empirical data so the results have been presented in the form of tables given below. The statistical analysis consists of descriptive and inferential statistics. In descriptive statistics, it includes Cronbach α , mean, standard deviation, range, skewness, and kurtosis. Inferential statistics includes Pearson Product Moment Correlation, *t*-test and ANOVA.

Descriptive Statistics and Psychometric Properties of Scales

To see the descriptive statistics and psychometric properties alpha coefficients, mean, standard deviation, range, skewness, and kurtosis were computed for Emotion regulation, Cognitive reappraisal, Expressive suppression, Mindfulness, Burnout, Emotional Exhaustion, Cynicism, and Academic efficacy.

Table 2

Cronbach Alpha and Descriptive Statistics for Study Variables (N = 257)

Scales	Items	α	<i>M</i>	<i>SD</i>	Range		Skewness	Kurtosis
					Potential	Actual		
CR	6	.86	24.6	9.06	6-42	6-42	.13	-.87
ES	4	.77	15.7	5.99	4-28	4-28	.19	-.89
MAAS	15	.93	58.2	17.6	15-90	17-93	-.20	-.83
MBI-SS	16	.66	46.8	18.9	0-96	11-95	.56	.03
EXH	5	.87	15.9	8.15	0-30	0-30	.18	-1.1
CYN	5	.81	15.0	7.48	0-30	2-30	.25	-.89
AE	6	.75	20.0	7.71	0-36	0-34	-.71	-.12

Note. ER = Emotion Regulation; CR = Cognitive Reappraisal; ES = Expressive suppression; MAAS = Mindful Attention Awareness Scale; MBI-SS = Maslach Burnout Inventory Student Survey; EXH = Exhaustion; CYN = Cynicism; AE = Academic Efficacy.

Table 2 shows alpha reliability coefficients. High reliability value is indicated for Mindful Attention Awareness Scale i.e., .93. Then Cronbach alpha for two subscales of Emotion Regulation (i.e., Cognitive Reappraisal and Expressive Suppression) were .86 and .77 respectively. Cronbach alpha of Maslach Burnout Inventory was .66 and for its subscales (i.e., Emotional Exhaustion, Cynicism, and Academic Efficacy) were .87, .81, and .75 respectively. Both skewness and kurtosis values indicated that the data is normally distributed as the values lie within ± 2 (Field, 2013).

Table 3*Correlation Matrix among Study Variables (N = 257)*

Scales	CR	ES	MAAS	MBI-SS	EXH	CYN	AE
CR	-	.73**	.48**	-.38**	-.23**	-.32**	.38**
ES		-	.48**	-.40**	-.31**	-.31**	.35**
MAAS			-	-.58**	-.50**	-.46**	.44**
MBI-SS				-	.83**	.84**	-.74**
EXH					-	.65**	-.37**
CYN						-	-.42
AE							-

Note. CR = Cognitive Reappraisal; ES = Expressive Suppression; MAAS = Mindful Attention Awareness Scale; MBI-SS = Maslach Burnout Inventory Student Survey; EXH = Exhaustion; CYN = Cynicism; AE = Academic Efficacy.

** $p < .01$

Table 3 demonstrates that emotion regulation is positively associated with mindfulness and negatively associated with burnout. Cognitive reappraisal is positively associated with Expressive Suppression, Mindfulness, and Academic Efficacy while negatively associated With Burnout and its two subscales (Emotional Exhaustion and Cynicism). Expressive Suppression is also positively related to Mindfulness and Academic Efficacy and negatively associated with Burnout and its two subscales (Emotional Exhaustion and Cynicism). Mindfulness positively associated with Academic Efficacy and negatively associated with Burnout, Emotional Exhaustion, and Cynicism. Burnout is positively associated with its two subscales (Emotional Exhaustion and Cynicism) and negatively associated with Academic Efficacy. Emotional Exhaustion is positively associated with Cynicism and negatively associated with Academic Efficacy. Cynicism is also negatively associated with Academic Efficacy.

Mediation Analysis

Mediating role of mindfulness in predicting burnout was also analyzed from both of the strategies (Cognitive Reappraisal and Expressive Suppression) for regulating emotions. Mediation is a hypothesized causal chain in which one variable (Emotional regulation) gets affected by a second variable (Mindfulness) and this in turn, affects a third variable (Burnout).

Table 4*Direct and Indirect Effect of Mindfulness in Predicting Burnout (N = 257)*

Predictor	MBI-SS			
	Mode 1 B	Model 2 B	95% CI	
			LL	UL
Constant	66.80***	86.13***	79.24	93.02
CR	-.81**	-.28*	-.68	-.43
MAAS		-.56***	-.52	-.04
R ²	.15			
F	44.89***			
ΔR		.21		
ΔF		25.07***		

Note. CR = Cognitive Reappraisal; MAAS = Mindful Attention Awareness Scale; MBI-SS = Maslach Burnout Inventory Student Survey.

** $p < .01$, *** $p < .001$

Table 4 demonstrates the mediating effects of mindfulness in predicting Cognitive Reappraisal and burnout. It shows that Cognitive Reappraisal has a significant direct effect on Burnout ($B = -.81, p < .05$) and also there is significant indirect effect of Cognitive Reappraisal ($B = -.28, p < .05$) through Mindfulness ($B = -.56, p < .05$) on Burnout. In other words, it is indicated that Cognitive Reappraisal effects burnout from pathway of Mindfulness whereby this path explains 21% of additional variance. Significant *Sobel test* value -6.31 ($p < .001$) also strengthen the confidence to say that mediational role has been found.



Table 5

Direct and Indirect Effect of Mindfulness in Predicting Burnout (N = 257)

Predictor	MBI-SS			
	Mode 1 <i>B</i>	Model 2	95% <i>CI</i>	
		<i>B</i>	<i>LL</i>	<i>UL</i>
Constant	66.89***	86.26***	60.8	72.9
ES	-1.27***	-.48**	-1.63	-.91
MAAS		-.55***	-.67	-.42
<i>R</i> ²	.16			
<i>F</i>	49.09***			
ΔR		.20		
ΔF		22.14***		

Note. ES = Expressive Suppression; MAAS = Mindful Attention Awareness Scale; MBI-SS = Maslach Burnout Inventory Student Survey.

p* < .01, *p* < .001

Table 5 demonstrates the mediating effects of Mindfulness in predicting Expressive Suppression and Burnout. It shows that Expressive Suppression has a significant direct effect on Burnout ($B = -1.27, p < .05$) and also there is significant indirect effect of Expressive Suppression ($B = -.48, p < .05$) through Mindfulness ($B = -.55, p < .05$) on Burnout. In other words, it is indicated that Expressive Suppression effects Burnout from pathway of Mindfulness explaining 20 % of additional variance. Significant *Sobel* test value -6.27 ($p < .00$) also strengthen the confidence to say that mediational role has been found.

Group Differences on Study Variables

Independent sample t-test has been conducted to see group differences on study variables (Cognitive Reappraisal, Expressive Suppression, mindfulness, and burnout) with reference to demographic variables i.e., gender, college sector, and student status.

Table 6

Gender Differences on Study Variables (N = 257)

Scales	Gender				<i>t</i>	<i>P</i>	95% CI		Cohen's <i>d</i>
	Male (<i>n</i> = 106)		Female (<i>n</i> = 151)				<i>LL</i>	<i>UL</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
CR	20.4	8.02	27.5	8.63	-6.6	.00	-9.14	-4.9	0.85
ES	13.5	5.4	17.3	5.8	-5.3	.00	-5.2	-2.4	0.67
MAAS	56.3	20.2	59.5	15.5	-1.4	.15	-7.5	1.24	0.17
MBI-SS	47.5	20.5	46.1	17.7	.72	.46	-2.9	6.48	0.07
EXH	15.8	8.20	16.0	8.15	-.23	.81	-2.2	1.79	0.02
CYN	15.5	7.79	14.7	7.25	.85	.39	-1.0	2.6	0.10
AE	19.4	7.92	20.5	7.5	-1.0	.27	-2.9	.86	0.14

Note. CR = Cognitive Reappraisal, ES = Expressive Suppression, MAAS = Mindful Attention Awareness Scale, MBI-SS = Maslach Burnout Inventory Student Survey, EXH = Exhaustion, CYN = Cynicism, AE = Academic Efficacy.

Table 6 demonstrates that female medical students score significantly high on Cognitive Reappraisal and Expressive Suppression than male medical students. Cohen (1988) defined Cohen's *d* effect sizes as small, *d* = .2, medium, *d* = .5, and large, *d* = .8 (p. 25). However Cognitive Reappraisal and Expressive Suppression show large effect size which indicate there are large group differences and rest of the variables shows nonsignificant group differences.

Table 7*College Sector based Group Differences on Study Variables (N = 257)*

Variables	College Sector				<i>t</i>	<i>P</i>	95% CI		Cohen's <i>d</i>
	Public (<i>n</i> = 191)		Private (<i>n</i> = 66)				<i>LL</i>	<i>UL</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
CR	23.9	8.65	26.5	9.97	-1.9	.04	-5.0	-.01	0.27
ES	15.1	5.57	17.4	6.84	-2.6	.00	-3.9	-.59	0.36
MAAS	55.8	16.7	65.0	18.7	-3.7	.00	-14.0	-4.38	0.51
MBI-SS	48.2	18.0	43.0	21.1	1.9	.05	-.17	10.4	0.26
EXH	16.8	7.83	15.5	7.49	2.8	.05	.98	5.5	0.16
CYN	15.05	7.49	15.1	7.51	-1.1	.90	-2.23	1.98	0.01
AE	19.5	7.14	21.6	9.04	-1.9	.05	-4.25	.05	0.25

Note. CR = Cognitive Reappraisal; ES = Expressive Suppression; MAAS = Mindful Attention Awareness Scale; MBI-SS = Maslach Burnout Inventory Student Survey; EXH = Exhaustion; CYN = Cynicism; AE = Academic Efficacy.

Table 7 reflects that medical students of private sector colleges have significantly high score on Cognitive Reappraisal, Expressive Suppression, Mindfulness, and Academic Efficacy. Medical students of public sector colleges scored high on Burnout and Emotional exhaustion. Cognitive Reappraisal, Expressive Suppression, Burnout, Emotional Exhaustion, and Academic Efficacy has small effect size which show small group differences and Mindfulness has medium effect size which show moderate group differences. Cynicism has nonsignificant group difference.

Table 8*Student Status based Group Differences on Study Variables (N = 257)*

Scale	Student Status				<i>t</i>	<i>P</i>	95% CI		Cohen's <i>d</i>
	Day scholar (<i>n</i> = 158)		Hostelite (<i>n</i> = 99)				<i>LL</i>	<i>UL</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
CR	24.3	8.65	25.0	9.7	-.55	.57	-2.9	1.64	0.07
ES	15.1	5.64	16.6	6.43	-1.9	.04	-3.0	-.02	0.24
MAAS	54.4	16.1	64.2	18.4	-4.4	.00	-14.1	-5.4	0.56
MBI-SS	50.2	18.1	41.4	18.9	3.73	.00	4.17	13.5	0.80
EXH	17.8	7.89	12.9	7.66	4.94	.00	2.97	6.92	0.63
CYN	16.1	7.42	13.3	7.28	2.93	.00	.91	4.6	0.38
AE	19.6	7.59	20.8	7.89	-1.2	.21	-3.17	.71	0.15

Note. CR = Cognitive reappraisal, ES = Expressive suppression, MAAS = Mindful attention awareness scale, MBI-SS = Maslach Burnout Inventory Student Survey, EXH = Exhaustion, CYN = Cynicism, AE = Academic Efficacy.

Table 8 demonstrates that students who live in hostels score significantly high on Expressive Suppression and mindfulness and day-scholars score high on Burnout, Emotional Exhaustion, and Cynicism. Effect size is larger for Burnout, Emotional Exhaustion, which shows larger group differences and smaller for Expressive Suppression which shows small differences in groups, and moderate for Mindfulness and Cynicism which reflects medium group differences.

Table 9*Medical Year based Group Differences on Study Variables (N = 257)*

Scales	Initial years		Middle years		Later years		F	p	i-j	D (i-j)	95% CI	
	Group 1 (n = 68)		Group 2 (n = 109)		Group 3 (n = 80)						LL	UL
	M	SD	M	SD	M	SD						
CR	25.5	9.17	24.6	7.76	23.7	10.5	.70	.49				
ES	16.2	5.76	15.9	5.13	15.1	7.19	.62	.53				
MAAS	58.7	16.5	59.8	15.6	55.6	20.9	1.34	.26				
MBI-SS	44.8	14.7	44.5	16.4	51.7	23.9	3.93	.02				
									3>1,2	7.1	.55	13.7
EXH	15.7	7.19	15.3	7.86	17.0	9.24	1.02	.36				
CYN	15.2	6.96	13.8	6.83	16.6	8.46	3.40	.03				
									3>1,2	2.8	.22	5.45
AE	22.1	6.46	20.4	6.73	17.9	9.31	5.90	.00				
									1>2,3	4.2	1.24	7.23

Note. CR = Cognitive Reappraisal; ES = Expressive Suppression; MAAS = Mindful Attention Awareness Scale; MBI-SS = Maslach Burnout Inventory Student Survey; EXH = Exhaustion; CYN = Cynicism; AE = Academic Efficacy.

Table 9 shows mean differences of medical year with study variables. This analysis produced significant results for Burnout and its two subscales Cynicism and Academic Efficacy. The post-hoc Gabriel analysis showed that medical students in later years of medical education experience more Burnout, Cynicism, and less Academic Efficacy as compare to medical students of initial years. Other variables have shown nonsignificant results.

Discussion

Discussion

The current study aimed to explore the mediating role of mindfulness for emotion regulation and burnout among medical students. It also aimed to explore the relationship of study variables along with demographic variables i.e., age, gender, college sector, year of medical studies, student status, family income and marital status.

Employing the technique of convenient sampling data was collected from 3 medical colleges of Islamabad and Rawalpindi. Detailed demographic description of the sample has been provided (see table 1). In order to assess the psychometric properties of scales, and check normality assumption, descriptive statistics were computed (see Table 2). The reliability for all the scales and subscales were satisfactory. The values indicated that all scales have sound psychometric properties. Values of skewness and kurtosis were also within the range of ± 2 , therefore, it can be inferred that the data was normally distributed (Field, 2013).

Hypotheses based on existing literature were tested. It was hypothesized that cognitive reappraisal will be positively related to mindfulness among medical students. Pearson Product Moment Correlation indicated significant positive relationship between mindfulness and cognitive reappraisal (see Table 3). Past literature confirms these findings. One study assessed the relationship between mindfulness and cognitive reappraisal. According to the results, mindfulness was associated with increased cognitive reappraisal ability (Troy, Shallcross, Dvis, & Mauss, 2013). Another research study suggests that mindfulness promotes emotional regulation by enhancing cognitive reappraisal (Garland, Hanley, Farb, & Froelger, 2015). As mindfulness is a process of maintaining a moment-by-moment awareness of our thoughts, feelings, bodily sensations, and surrounding environment so such an approach is thought to be instigated by cognitive reappraisal like emotion regulation strategy. Mindfulness is a state of active, open attention on the present (Murray et al., 2015). When an individual is mindful, he/she carefully observe his/her thoughts and feelings without judging them good or bad. In that way, an individual can get a

mindful state when applying appropriate emotion regulation strategies to process ongoing events.

It was hypothesized that expressive suppression will be negatively related to mindfulness among medical students. Pearson Product Moment Correlation indicated significant positive relationship between mindfulness and expressive suppression (see Table 3) which indicates that the second hypothesis of current study is rejected. According to the past literature, many researches has shown that the habitual use of expressive suppression as an emotion regulation strategy has been consistently linked to adverse outcomes in a number of domains including psychological functioning. Suppressors feels to have less social support, worse coping abilities, lower life satisfaction, and self-esteem, all factors increasing the risk for depressive symptoms (Sheldon, Ryan, Rawsthorne, & Ilardi, 1997). However, there are researches that demonstrate the culture plays an important role. One study examined the habitual use of expressive suppression in two cultures explained that the negative associations of suppression were seen in European American but not among the members of East Asian cultures, in which emotional restraint is relatively encouraged over emotional expression (Soto, Perez, Kim, Lee, & Minnick, 2011). Since such an approach is also followed in our culture this study highlights the importance of context in understanding the results of current study that due to cultural differences in habitual use of suppression for showing positive association with mindfulness.

It was hypothesized that cognitive reappraisal and mindfulness will be negatively related to burnout among medical students. Pearson Product Moment Correlation show significant negative relationship between cognitive reappraisal and burnout (see Table 3). Literature also supported these findings. One research study found that cognitive reappraisal is associated with lower stress-related symptoms (Moore, Zoellner, & Mollenholt, 2008). According to the results of one study, females who have high cognitive reappraisal ability exhibited lower level of stress as compare to the females who have low cognitive reappraisal ability (Troy, Wilhelm, Shallcross, & Mauss, 2010). Additionally, a study examined the relationship between teachers emotional exhaustion and emotional regulation proposed that different strategies for regulating emotions, cognitive reappraisal and expressive suppression effects the experience of emotional exhaustion directly which is associated with burnout. Low

level of emotional exhaustion has similarly been reported by teachers when mainly using cognitive reappraisals and high level of emotional exhaustion when using expressive suppression as a strategy for regulating emotions (Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010). These findings demonstrate that cognitive reappraisal is negatively associated with emotional exhaustion which is the component of burnout. Pearson Product Moment Correlation also indicated significant negative relationship between mindfulness and burnout (see Table 3). Literature provides some evidence about mindfulness and burnout relationship. Mindfulness-based interventions have a potential role in decreasing stress and burnout (Goodman & Schorling, 2012). Another research suggested that mindfulness reduces emotional exhaustion and improves job satisfaction (Hülshager et al., 2013). Large population-based research studies have indicated that the practice of mindfulness is strongly correlated with greater wellbeing and perceived health (Carmody & Baer, 2008). As healthcare provider remains under increasing stress so, results of the current study suggest that building mindfulness among medical students is an effective strategy for preventing burnout and fostering health and well-being.

It was hypothesized that expressive suppression will be positively related to burnout among medical students. Pearson Product Moment Correlation show significant negative relationship among expressive suppression and burnout (see Table 3) which indicates that the fourth hypothesis of the current study is refuted. Literature also supported these findings. As mentioned earlier (see p. 44) a study highlighted the importance of cultural context in interpreting findings where expressive suppression is seen to be a favorable affect handling approach and emotional restraint is relatively encouraged over emotional expression (Soto et al., 2011). Generally, when an individual suppresses his/her emotions consistently he/she becomes more exhausted that leads towards burnout. But being a culturally encouraged response tendency study results have found contrary findings.

It was hypothesized that mindfulness will mediate the relationship between cognitive reappraisal and burnout among medical students. Mediation analysis show significant results for the proposed hypothesis (see table 4) and is supported by literature. For instance, study examined the relationship between emotional exhaustion and emotional regulation proposed that different strategies for regulating

emotions, cognitive reappraisal and expressive suppression effects the experience of emotional exhaustion directly which is associated with burnout. Low level of emotional exhaustion has similarly been reported by teachers when mainly using cognitive reappraisals and high level of emotional exhaustion when using expressive suppression as a strategy for regulating emotions (Tsouloupas et al., 2010). Research suggested that mindfulness is related with increased adaptive regulation of emotions and with reduced burnout (Gerzina & Porfeli, 2012). Another research study suggests that mindfulness promotes emotional regulation by enhancing cognitive reappraisal (Garland, Hanley, Farb, & Froelger, 2015). These findings suggest that mindfulness mediates the relationship between cognitive reappraisal and burnout by providing rational way for regulation of emotions and lessening emotional exhaustion which is the component of burnout.

It was hypothesized that mindfulness will mediate the relationship between expressive suppression and burnout among medical students. Mediation effect has been shown significantly but contrary to the proposed direction (see table 5). Results shows that expressive suppression has a significant negative direct effect on burnout however theoretically there should be positive direct effect of expressive suppression on burnout. Though the finding is contrary to literature but again can be explained in the light of culture based differences in portrayal of some behavioral tendencies (Soto et al., 2011).

In order to check the group differences on study variables group comparison were done. It was hypothesized that female medical students will score high on cognitive reappraisal and male medical students will score high on expressive suppression. Significant results were found for cognitive reappraisal where female medical students were found to be higher than male medical students (see Table 6) which indicates that the formulated hypothesis was partially supported. These results were also supported by past literature. One research explained both of the strategies in terms of gender differences where females scored high on cognitive reappraisal and male scored high on expressive suppression (Nolen-Hoeksema & Aldao, 2011).

Second part of that hypothesis was male medical students will score high on expressive suppression. Significant results were found for expressive suppression where female students were found to be higher than male medical students (see Table

6) which indicates that study results refuted the stated notion. Results of the current study demonstrate that female medical students scored high on different strategies for regulating emotions. According to the literature female students reported using a wide range of strategies more than male students including rumination, suppression, acceptance, and social support (Tamres, Janicki, & Helgeson, 2002).

Group differences for private and public/sector colleges were also checked on study variables. It was hypothesized that medical students of public sector colleges will report more burnout as compare to medical students of private sector colleges. Significant results were found for college sector from *t*-test. Results indicate that students of private sector medical college scored high on mindfulness, emotional regulation, and academic efficacy and low on burnout and emotional exhaustion as compared to students in public sector medical college. According to present research medical students of private sector medical college are more mindful, have less burnout and can regulate their emotion better in comparison to students of public sectors medical college (see Table 7). Past literature confirm these findings too. Different publications on primary level education sector in Pakistan have highlighted the percentage of children going to private schools in Pakistan has risen rapidly. These publications have also acknowledge that quality of private education is better than public (Bukhari, 2008).

This is an established fact in the urban areas of Pakistan. Now this trend is also seen taking place among the rural population, as the demand for private schools is increasing. The main reason is the belief that the quality of education and facilities in these schools is better than that of their public-sector counterparts (Abbasi, 2012).

It was hypothesized that day scholar medical students will report more burnout as compare to hostelite medical students. Significant differences were found for day-scholars on burnout as compare to hostelite (see Table 8). These findings have also received research support. For instance, research suggested that day-scholars experience more stress as compare to hostelite (Ravichandran, 2015). Hostel life makes a student more social and outspoken. Students to interact with their peers and colleagues make friends and develop into good human beings capable of independent decisions.

On the other hand, day scholars feel exhausted due to travel time since most of the medical colleges are located at quite far distance and lack of time to accomplish study tasks which cause them to feel academically exhausted. Significant group differences were also found for mindfulness among day-scholars and hostelite. Results of the current study indicate that hostelite is more mindful than day-scholars. Hostelite being more mindful feels less burnout.

It was hypothesized that students in the later years of medical studies will report more burnout as compare to the students of initial years of medical studies. Significant results were found for Burnout, Cynicism, and Academic Efficacy from ANOVA (see Table 9). Students who were in later years of medical studies reported more burnout, cynicism and low academic efficacy as compare to students who were in initial years of medical education. These findings are also supported by past literature. Dyrbye et al., (2010) suggested that burnout progressively develops over the course of medical education. Another research (Tarnowski & Carlotto, 2007) suggests that the transition from the introductory medical study to the practical field and fear caused by the feelings of limitations regarding the scientific knowledge presents a reason for stress among medical students.

Conclusion

Present study supports the mediating role of mindfulness for both of the strategies of emotional regulation and burnout among medical students. Findings of the present study revealed that cognitive reappraisal is positively related with mindfulness and negatively to burnout whereas expressive suppression is negatively related to burnout and positively related with mindfulness.

Limitations and Suggestions

No matter, how well a research is conducted there are some limitations. The present study also had few limitations which may restrict the generalizability of the findings. Limitations of the present research are as follows:

1. The data was collected from only three different private/public colleges of Islamabad and Rawalpindi. In future, researchers should collect data from

multiple Medical colleges of Islamabad and Rawalpindi, and across different cities of Pakistan to enhance generalizability of the research findings.

2. The use of self-report measures may result in high social desirability and acquiescence response style. These methods also affected the subjectivity of the participants such as making patterns at the time of filling out the questionnaire and the subjective interpretation of the questionnaire items.
3. In the present research nonprobability sampling technique was used and the groups of student were not equal according to medical years that affected the generalizability of the data. In future groups should be equal and sample size should be large for good generalizability.

Implications

Findings of the research have some practical implications in educational settings related to medical field, which are as follows.

1. Results indicates that mindfulness play a significant mediating role for the relationship between emotional regulation and burnout among medical students. So, this research will guide medical students to deal with burnout by regulating emotions through cognitive reappraisal or expressive suppression and thus increasing propensity for mindfulness which tends to lower the burnout levels.
2. This research will also help medical colleges that they should organize mindfulness based trainings, courses, and workshops specifically tailoring them according to needs of different medical study years.

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APPENDICES

Informed Consent

I am a student at National Institute of Psychology, Quaid-i-Azam University, Islamabad. I am conducting research to explore role of emotional regulation and mindfulness in relation to burnout among medical students. You are thus requested to provide with your stance on the questions asked. Instructions are provided with each set of statement separately.

I request you to support my purpose and participate in this research. I assure you that information provided by you will be kept confidential and will only be used for research purpose. Moreover, it will not be shared with any individual or organization. Your participation in this regard is completely voluntary. You have all the rights to discontinue participation at any point.

If you are willing to participate, please sign below on the space provided. Your support and participation will be highly appreciated. You are requested not to leave any statement unanswered.

Regards,

Sumra Aslam

Email: sumraaslam5@gmail.com

Signature

Demographic Sheet

Date of Birth (DD/MM/YYYY): _____

Today's Date (DD/MM/YYYY): _____

Gender: Male: Female:

College Name: _____

College Sector: Public Sector College: Private Sector College:

Year of Medical Studies: _____

Student Status: Day Scholar: Hostelite:

Family Income (Monthly): _____

Marital Status: Single: Married:

Emotional Regulation Questionnaire

You are requested to read each statement carefully and answer it as it represents you. Please note that there are no right and wrong answers. Against each statement, provide your answer by choosing from the following scale:

1	2	3	4	5	6	7
Strongly Disagree			Neutral			Strongly Agree

S.no.	Statements	1	2	3	4	5	6	7
1	When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.							
2	I keep my emotions to myself.							
3	When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.							
4	When I am feeling positive emotions, I am careful not to express them.							
5	When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm.							
6	I control my emotions by not expressing them.							
7	When I want to feel more positive emotion, I change the way I'm thinking about the situation.							

8	I control my emotions by changing the way I think about the situation I'm in.							
9	When I am feeling negative emotions, I make sure not to express them.							
10	When I want to feel less negative emotion, I change the way I'm thinking about the situation.							

Appendix-D

Mindful Attention Awareness Scale

Below is a collection of statements about your everyday experience. Using the six point scale (1-6) given below, please indicate how frequently or infrequently you currently have each of the asked experience. Please treat each statement separately from every other statement.

1	2	3	4	5	6
Almost	Very	Somewhat	Somewhat	Very	Almost
Always	Frequently	Frequently	Infrequently	Infrequently	Never

S.no.	Statements	1	2	3	4	5	6
1	I could be experiencing some emotion and not be conscious of it until sometime later.						
2	I break or spill things because of carelessness, not paying attention, or thinking of something else.						
3	I find it difficult to stay focused on what's happening in the present.						
4	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.						
5	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.						
6	I forget a person's name almost as soon as I've been told it for the first time.						
7	It seems I am "running on automatic," without much awareness of what I'm doing.						

8	I rush through activities without being really attentive to them.						
9	I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.						
10	I do jobs or tasks automatically, without being aware of what I'm doing.						
11	I find myself listening to someone with one ear, doing something else at the same time.						
12	I drive places on 'automatic pilot' and then wonder why I went there.						
13	I find myself preoccupied with the future or the past.						
14	I find myself doing things without paying attention.						
15	I snack without being aware that I'm eating.						

Appendix-E

MBI-SS (Student Survey)

The following 16 statements are about how you feel at school or during your studies. Please read each statement carefully and decide if you ever feel this way. If you have never had this feeling, chose the "0" (zero) in the appropriate box after the statement. If you have had this feeling, indicate how often you feel it by choosing a number (from 1 to 6) that best describes how frequently you feel that way.

Never had this feeling 0	A few times a year 1	Once a month or less 2	A few times a month 3	Once a week 4	A few times a week 5	Have this every time 6
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S.no.	Statements	0	1	2	3	4	5	6
1	I feel emotionally drained (tired) by my studies.							
2	I feel used up at the end of the school day.							
3	I feel tired when I get up in the morning and have to face another day at school.							
4	Studying or attending classes all day is really a strain for me.							
5	I can effectively solve the problems that arise in my studies.							
6	I feel burned out (exhausted) from my studies.							
7	I feel I am making an effective contribution in class.							
8	I've become less interested in my							