

An overview of psychological factors and interventions in air combat operations

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ABSTRACT

Combat stress management and psychological support of Air Force personnel are important tools for 'combat unit' effectiveness. Studies have revealed a strong link between combat experiences and a variety of adverse mental health, psychosocial and occupational effects. With the advancements in missile technology in our subcontinent, a chemical/biological attack on our forward air bases cannot be ruled out. A model of individual behavior in combat stress conditions posits a number of antecedent variables acting through mediating variables to affect the individual's appraisal of the combat situation and subsequently result in the combatant's modes of response and coping with the realities of combat [1]. The model is dynamic in that the individual's preferred coping behavior in turn affects his reappraisal of the situation and thus may further alter his combat responses. The role of the commanders can, magnify or minimize the impact of the (objective) antecedent variables on the combatant's (subjective) cognitive appraisal. This review covers: combat stress in aviation, the psychodynamics of combat reactions, aircrew performance in combat environment, combat stress reactions in ground support personnel, the required psychosocial interventions, the concerns during preparations for hostilities, during hostilities and post-hostilities stress. Finally, it recommends a feasible psychological support solution to enhance effectiveness of airpower in war. This multi-level strategy can maximize combatant resilience and mitigate the effects of stressors during hostilities.

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In the recent past, the Indian Air Force (IAF) had been involved in some limited, low intensity combat situations. Exercise of air power in war is arguably the most mentally, physically and emotionally demanding enterprise that military aircrew engage in. The demands of such airborne missions might result in stress in the lives of personnel involved in them. Stress in aircrew is of particular concern, especially if they are operating high performance aircraft in tactical missions such as air defence, ground attack and air support missions. In one study the effect of stress on four squadrons of USAF aviators was evaluated. Those squadrons which were deployed for combat reported different patterns of stress than those who were undeployed [2]. However, the exact incidence of combat stress reaction and disorders in Air Force personnel are unavailable. Studies in mixed military populations indicate that 11 % to 17% of combatants

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and support personnel are at risk for mental disorders after return from combat duty [3,4].

Added to this is a likely futuristic scenario in our subcontinent, of our forward air bases being targeted with chemical/biological weapons. Many psychological effects of the use or threat of use of such weapons stem from wearing of mission-oriented protective suit. The "classic triad" of symptoms includes anxiety, panic, and claustrophobia. The problem of field management of such casualties is complicated by the known CNS symptoms of nerve agents. These include ataxia, confusion, slowing or loss of reflexes, slurred speech, coma, and paralysis [5]. Initial psychosocial interventions include effective and accurate risk communication, management of misattribution of

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somatic symptoms and the creation of a recovery environment that restores effective social roles and returns people to their usual sources of social support [6]. Some of the psychological morbidity could be ameliorated through planning and appropriate early intervention. One key component of early intervention is monitoring consistent and clear messages about health risks which can have serious impact on the mental health of the population [7]. Chemical/biological attacks on trained manpower are likely to yield lasting efficacy in blunting fighting will and capability than the attacks on runways and other built up structures at airfields/ missile sites. The fact that these weapons require less delivery accuracies, make them all the more attractive. During the past few decades such weapons have been used by Iraq against military and civilian populations; with catastrophic effects.

The aircrews in combat encounter numerous traumatic events that could have deleterious effects on their mental health and emotional well-being. Studies have demonstrated strong link between combat experiences and a variety of adverse mental, health, psychosocial, and occupational effects; including combat stress reactions, substance misuse, depression and even marital discord [8]. Combat stress management and psychological support of Air Force personnel are recognized as important tools for 'combat unit' effectiveness and sustainability.

This review paper is the result of the following review and synthesis method. Databases were electronically searched for key terms such as psychological factors combat, air combat, aircrew, combat stress, combat stress control and air force. Information regarding 'concerns before, during and after hostilities' emerged from verbal/email interviews with IAF aircrew who partook in the 1971 Indo-Pak war. Material was collected in hard/ soft prints. Assembled literature was collated and rechecked for relevance, scientific nature and status

of descriptions and classified as subject and main findings. Headings for the review were given covering the main issue or findings discussed in the literature. Summaries of these were then used for compilation, along with research issues and gaps in the literature. Some practical recommendations are provided by the author based on evaluations and experience in the Indian conditions; these may not necessarily have previous empirical basis in foreign air forces.

The topics covered in this review are combat stress in aviation, psychodynamics of combat reactions, aircrew performance in the combat environment and combat stress reactions in ground support personnel. It also discusses the effects of hostilities and the required psychosocial interventions, concerns during preparations for hostilities, concerns during hostilities, post-hostilities stress and finally, the recommendations for practice of psychological support.

Combat stress and aviation

Aviators use various coping mechanisms to relieve the stress of combat missions like esprit de corps, recounting successful action against enemy targets, denial of danger through inter alia, light-hearted conversation and jokes and identification with the strength of the aircraft, the unit and the Air Force [9]. The etiology of combat stress disorders in aircrew was grouped by Grinker and Spiegel [10] into four basic categories: (a) threat of injury or death; (b) threat of injury or death of friends; (c) requirement to engage in destructive activity; and (d) adverse effect of combat related stressors on the motivation to fly and fight.

' The risk of combat stress in military aviation personnel may be increasing due to the changes brought by technological advances such as satellite surveillance capability >:ea!h aircraft, air-to-air

refueling and sustained aircraft operations, airborne surveillance and control capability, smart weapons, tactical medium range ground-to-ground strike capabilities, and intense air defence protection of enemy targets. Additional stress may result from the fact that the rate of replacement of losses may be slower when the losses are more substantial such as replacing highly trained aircrew, expensive aircraft and equipment or highly trained and motivated ground crew. Further, seniors who provide airborne leadership as well as ground planning and briefings may experience a faster onset of fatigue, adversely influencing their leadership skills and consequently affecting the morale of their subordinates.

There could be varied missions for fighter, helicopter and transport crew, in a changing war scenario. Fighters fly air defence missions to maintain air superiority over the theatre of operations. There are ground attack missions like, attacking enemy troop concentrations, armor, artillery, routes, supplies, equipment, radars and airfield complexes. Forward Air Controllers identify targets in the tactical battle area and coordinate strikes. Reconnaissance pilots image areas for assessing damage and planning further missions. Bomber crew may face different perils due to the need for deeper penetration. Helicopter pilots fly special missions, deploying or evacuating, rescuing downed fliers and conducting casualty evacuations. Transport crew will move troops and airlift supplies/equipment, delivering them from the air by parachute or by special low-altitude extraction systems or by landing on short strips to off-load in the conventional way [11].

Thus the tactical aircrews are exposed to mission-specific dangers: small-arms fire, anti-aircraft artillery fire, surface-to-air missiles and enemy air defence fighters. In an intensely battle-

foggy environment, even the threat of friendly fire cannot be ruled out. The threat of chemical or biological attack at base may act as a stress multiplier. In tactical roles pilots may fly two to four sorties a day. Israeli fighter pilots in the 1967 war though expected to fly three or four sorties a day, actually flew an average of seven sorties a day; some flew as many as ten a day. Often, the dangers of such missions or the lack of it will be familiar to the fliers. But some missions or target areas will be unpredictable; thus adding the stress of uncertainty to all other stresses of combat [11].

Transport crew will be affected by some but not all of these considerations; but have added stresses due to their aircraft size and low speeds. The large/medium cargo helicopters, used for re-supply of troops and camps under fire, would practically invite enemy fire upon them. The stress of flying such large, defenseless machines during the missions is enormous, especially because these activities take place in locations known in advance to the enemy, whose weapons may already be ranged and sighted in. Fixed wing transport crew may be called upon to make many landings during a day's missions; and their vulnerability to ground fire leads to a constant state of arousal. There are only limited options to counter such fire when it occurs. Flying such missions where attack by enemy air defence aircraft is possible, will add to the strain.

There are three important aspects for the support of fliers in combat. One is the similarity between the "fear of flying" syndrome, which may occur in peace as well as in wartime, and the signs and symptoms usually associated with combat fatigue. The second is the use of rest as a primary preventive and therapeutic measure. The third is the close relationship between the fliers and the health-care providers such as aviation medicine specialists, psychologists and psychiatrists who are responsible for providing preventive health measures and medical support [11].

With the introduction of women into the IAF in 1994, concerns about the effects of mixed-gender units on combat mission accomplishment and flight safety have begun to assume importance. Research in the USAF indicates that majority of pilots believed that women were well integrated into their squadrons and members with the most difficulty dealing with women were older males including some commanders [12]. However another study indicated that women reported unequal treatment by opposite-gender peers, problems relating to peers, superiors and subordinates; their gender influencing assignments; the need to perform to higher standards and to work harder to be accepted as equals; ability to bond equally to their own and opposite-gender peers; improved squadron cohesiveness in mixed gender squadrons; problems with peers' spouses; and in a POW situation fear of sexual abuse. Men reported women getting inappropriate privileges and special "breaks"; gender difference in how flight duties are performed; poor squadron cohesiveness in mixed gender squadrons and a higher concern for welfare of families in a POW situation [13]. It has been suggested that some of these differing perceptions could be modified through training, others resolved through high level orders/policies; while in the rest, the military may have to accept that the women are different from men in some respects.

Psychodynamics of combat reactions

Psycho dynamically, individuals in combat merge their narcissistic defense mechanisms with an idealized object such as a squadron, a unit, or the nation; leading to the enhancement of their belief that they will not die, and that their leaders will protect them through appropriate material and strategic defence [2]. Military experience confirms that units with the highest morale withstand the rigors of war most effectively [14]. Group cohesiveness and identification of the individual with the group enhance resistance to combat exhaustion [15]. Glass emphasized that the bond

established among unit members mitigates the effects of fear and facilitates support among unit members, so that individual needs and values are subordinated to the group's needs and standards of conduct [16]. The capacity for identification with the group is attributed to the individual's past history, which influences his or her capacity to form identifications with other groups of people and to feel loyal to them [10]. Shaw postulates a pattern of reciprocity between the combatant and the unit. He attributes the attachment between these two entities to a positive transference from the individual's relationship with parents. Therefore during combat an individual overcomes the fear of death through a tri-dimensional relationship with the unit; consisting of delusion of omnipotence, magical belief in the leaders, or belief that in time of need, peers will be able to provide for him/her. This results in a merger of the individual's ego ideal with the group's values which are then internalized so that the group's values are adopted as his own and is protected by obtaining the omnipotent power of the group [17]. Therefore the prevention and treatment of combat reactions is founded on supporting and rechanneling of the individual's ego defences against the overwhelming sense of helplessness associated with fear. This cannot occur without maintaining the symbiotic relationship between the individual and the unit.

For the tactical fighter pilot, the success both of air defence and ground attack missions depends on flying skills and coordination. Such a pilot must have a strong narcissistic component and supreme confidence in personal skills. This narcissism, an almost magical sense of personal invulnerability, is nourished by the Air Force's system of training. It displays itself in the typical "fighter pilot personality"

that is immediately apparent to the most casual observer of human nature. This pilot's effectiveness in battle depends on boldness, self-sufficiency, situational awareness and an internal locus of control. Such pilots will depend to some extent upon the wingman and the squadron for support; but deep in their hearts, each knows that one can ultimately depend only upon oneself. Maintenance of this narcissism in the face of mounting losses of friends (other fliers who were known to have been skillful and brave) requires a healthy initial motivation to fly, a strong ego and well developed denial skills to defend against personal fear and sense of mortality. Magical thinking and superstition may also be observed. Deaths of peers are briefly acknowledged and then consciously suppressed, in order to continue with the squadron mission [11].

A psychological model proposed by Gal & Jones [1] is interactional in that it posits a number of antecedent variables acting through mediating variables to affect the individual's appraisal of the combat situation and subsequently result in the combatant's modes of response and coping with the realities of combat.

This model is also dynamic wherein the individual's preferred coping behavior in turn affects his reappraisal of the situation and thus may further alter his combat responses. The antecedent variables pertain to the individual, group, and environmental aspects and may conveniently be categorized as follows: individual factors are personality, nonmilitary stress (family, etc.), prior combat exposure and role in combat. Unit factors are cohesion and morale, training, leadership, and commitment. Battlefield factors are type of battle, surprise and uncertainty and environmental factors (weather, terrain, etc.). These antecedent variables, according to the proposed model, do not directly determine the soldier's appraisal of the combat

situation; rather, they are mediated by other variables called the mediating variables— in an interactive manner. Of paramount importance in the combatant's expectation or interpretation of the immediate situation is the role his commanders (or persons in leadership positions) play in providing the information concerning the impending military operations.

Thus, the way in which he is briefed and the way in which missions are allotted, interacting with the antecedent variables, will strongly color his evaluation (appraisal) of both the nature of the stress and his ability to handle it. The role of the commander, then, becomes that of a lens, that is, either magnifying or minimizing the impact of the (objective) antecedent variables on the combatant's (subjective) cognitive appraisal.

Response patterns may be divided into the traditional categories of physical, emotional, cognitive, and social. These immediate, somewhat universal patterns of response will in turn produce individual modes of coping ranging from an optimal mode (normally involving a high, goal-oriented level of activity) to limited coping (frequently characterized by passivity) to grossly disturbed coping (breakdown). The modes of coping actually utilized will influence, in a feedback manner, the individual's reappraisal of the newly perceived situation and of his already tested capabilities to cope with it.

Aircrew performance in combat environment

Studies have been conducted using cognitive, perceptual, motor, and multiple tasks tests to predict aviator in-flight performance, in combat environment. Optimal cognition during complex and sustained operations is a critical component for success in current and future air operations. Cognitive Performance, Judgment, and Decision-making" (CPJD), a recently organized U.S. Army (Aviation) Medical Research and Material

Command research programme, focused on sustaining operational effectiveness of Future Force Warriors by developing paradigms through which militarily relevant, higher-order cognitive performance, judgment, and decision-making can be assessed and sustained in individuals, small teams, and leaders of network-centric fighting units. CPJD evaluates the impact of stressors intrinsic to military operational environments (e.g., sleep deprivation, workload, fatigue, temperature extremes, altitude variations, environmental/physiological disruption) on military performance, evaluates noninvasive automated methods for monitoring and predicting cognitive performance, and investigates pharmaceutical strategies (e.g., stimulant countermeasures, hypnotics) to mitigate performance decrements [18]. For example it was found in a study that acute sleep deprivation degrades visual perceptual, complex motor, and simple motor performances. Complex motor impairments in this task environment strongly correlate with visual perceptual impairments. This research provides support for the use of visual perceptual measures as surrogates of complex motor performance in operational situations where the primary cognitive inputs are through the visual system. This might be a component of cognitive monitoring systems that could potentially be applied to automated workload reduction systems [19].

Other studies done at the Brooks Air Force Base led to conclusions that combat performance may be degraded by suppressive effects of enemy weapons such as psychological, indirect / deterrent weapons (virulent propaganda, chemical, biological and cluster bombs etc.). Effective enemy weapon systems, such as anti-aircraft artillery can adversely impact on the otherwise efficacious fire power of ground attack aircraft. Further, high cockpit workload in a threat rich environment can lead to suppression of pilot performance, because of task overload. In dealing with suppressive enemy weapons, pre training combat practices influence pilot performance. At the Army Aero medical Research Laboratory at Fort Rucker, psychological

testing of subjects wearing the US Aircrew Chemical Defence Ensemble in an undemanding environment concluded that their mood was degraded, their accuracy slightly decreased and their reaction times were substantially increased [20].

Combat stress reactions in ground support personnel

Ground support personnel are also vulnerable to combat stress. In modern war, air bases are open to conventional, chemical or biological attack. It is a well acknowledged fact that humans are easier to attack with area weapons and such damage to well-trained manpower is much more calamitous to the fighting spirit and capability of the Forces, than damage to structures. The passive nature of the combat duties of aviation support ground personnel is different to the active participation of the aircrew. Aviation support personnel are often inadequately trained for combat and effective use of arms [9]. Other stressors that further elevate the risk of combat stress in them include: (a) the geographical location of their forward air bases, (b) the knowledge that use of chemical and biological weapons against them is a reality, (c) the families of active duty personnel living in these forward air bases may not get rapid evacuation and use of medical facilities; and (d) casualty caretakers usually have little collective or individual experience with mass casualty situations.

Effects of hostilities and required psychosocial interventions

The ultimate goal of any air force is to produce combat power at that enables it to defend its assets and areas of interests operations and if necessary. Attack targets a with devastating potential:

a potential, ready to be used in hostilities. In order to create this potential, air forces enlarge their combat readiness and capability as much as they can. This combat readiness consists of material readiness, personnel readiness and training level [21].

Psychosocial interventions consist of crisis-interventions, social system interventions and material service. Because psychosocial interventions extend the physical presence of the personnel of an operational unit (by preventing compassionate leaves or replacements), these interventions help to maintain operational readiness [22, 23]. It appears that a systematic approach in psychosocial interventions to a war-fighting unit contributes to operational effectiveness of that unit. The division of these interventions into pre-hostilities, during hostilities and after hostilities defines the systematic approach in these interventions.

Participating in operational deployments is a requirement for military personnel. This fact should be reflected in the organization, procedures and tools of psychological support. Hostilities, whether intermittent or on a regular basis, can have a long lasting or even permanent effect on the psychological well-being of personnel and their families. War affects the home front as well as the personnel who are actively participating. The effects of traumatic events and other factors associated with wars can emerge and remain long after the events. Psychological support rests on a combination of individual accountability and the responsibility of the military organization to provide such support. Psychological support is not only about individual mental health; it takes into account, and provides tools for both individual and unit 'mission fitness'.

Distress is seen during all phases of hostilities, but with proper training, planning and preparation, it can be decreased. Distress can be mitigated and managed through an informed community that shares an atmosphere of mutual support. Combatants need to know that their families are being taken care of, while they are at war. Commanders should keep unit members aware of potential challenges (e.g., living conditions, demands of work, communications) and let families know about the well-being of their members off and on; keeping all concerned individuals updated as situations change.

Concerns during preparations for hostilities

Two potential challenges for combatants preparing for action are potential placement in a hostile environment and anticipation of the unknown. Since war is likely to be a new experience for most of the present day IAF combatants (the last full-fledged war being in 1971), there may be high levels of anxiety during such preparations. When combatants prepare for hostilities, most individuals adapt well. They may experience a wide range of emotional reactions, including: anxiety, excitement, fear of the unknown, denial, shock, irritability, sadness or pride. They may also feel guilty/ worried about the probability of bereaving those who depend on them. Some combatants are likely to be worried about being caught as POWs. Increased tension in the family members is also very common as hostilities approach.

Commanders may want to request for Pre-Exposure Preparation (PEP) briefings if their forces could be exposed to traumatic events or critical incidents such as being exposed to the dead and the severely wounded during the hostilities, given the nature of their job. PEP addresses three areas: acknowledging and discussing realistic challenges, developing strategies to meet such challenges, (such as

implementing a buddy system, and team building strategies even for maintenance and

personnel) and optimizing healthy personal habits, including sleep, nutrition, and recreation. Commanders should encourage members whose families are likely to be stationed elsewhere to: discuss with their families how they will keep in touch and their expectations for communication (e.g., how often, what type). Family support and care is essential for the mental and emotional well-being of the combatants. One study has reported about the development and testing of the Psychological Readiness in a Deployed Environment training modules that provide both information about how combat impacts on the mental health of the soldier and the specific behaviors that soldiers and leaders can engage in to mitigate the stressors of deployment and combat [24].

The combatants must be made aware that full Air Force resources and even the might of the nation are backing them and their efforts. Newspapers, internet, radio and TV media can play an important, positive role towards this. Air Force must have own dedicated and well-motivated PROs and media managers to do this job effectively. Air Force could even employ private, professional media managing agencies to accomplish this function. Prominent citizens like actors, industrialists, performing artists, retired Armed Forces personnel and civil servants etc. must be encouraged to visit forward air bases to interact with/entertain combatants during the run up to the war. Clips about the life and living realities in forward Air Force bases must appear on national television channels regularly. The nation must be made aware of its Air Force personnel and their conditions. The combatants must also be safeguarded against the (likely) false and virulent propaganda of enemy's media. Commanders should ensure proper legal/administrative paper-action completed in respect of all combatants, regarding their next-of-kin, personal wills of

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inheritance, life insurance details etc. Personal and family readiness plans to deal with contingencies and family's specific needs will reduce stress levels in combatants. The existing Air Force Wives Welfare Association (AFWWA) counseling centers may be revitalized to continue with their work at higher efficiency.

Concerns during hostilities

There are a number of issues for the home front leadership because of family members' vulnerability to distress. Spouses must fill a new role as a single parent and make decisions previously made either by the departed spouse or by both partners together. In isolated families, the remaining spouse may be without significant social and emotional support. Adults may experience a wide range of reactions when a spouse is away for operational duties, including: sadness, anxiety or nervousness, difficulty with the children and fears about the safe return of the spouse. A few adults may experience depression. Distressed members should have access to mental health professionals. Children may also experience a number of reactions during a parent's absence during hostilities such as changes in their sleep, interests, energy, eating habits, and behaviors. They may act out in school, withdraw from activities, or develop depression. If problems are persistent and are significantly impacting the child's functioning, the parent should be encouraged to access mental health services.

During the hostilities spouses may feel stressors such as: added responsibility for maintaining the household, loneliness, fears about the spouse's safety, problems with other members of the family and problems with communication within the family? During war, rumors among spouses may increase fears and anxieties. Open, ongoing communication between commanders and family members is critical [25]. AFWWA could play a major role in downplaying unnecessary fears and worries among family members. Ideas for

increasing communication with family members include: unit newsletters, information briefings and AFWWA letters on accessible web-sites/notice-boards. The AFWWA presidents' offices in units must be connected to the LAN and its senior members could be entrusted with disseminating welfare information to all concerned. Some ways by which commanders can help families is by being available, keeping families posted regarding forward base conditions whenever possible, encouraging the family members to keep in contact with the fighting member and encouraging family support groups and keeping the family as informed as possible about important events (e.g., well-being of members and likely end of hostilities).

Personnel at rear bases too may experience higher levels of stress when other members of the unit are deployed at forward bases. This stress may be related to higher 'ops tempo' and requirement for much faster service, repair and replacement facilities, much fewer personnel to accomplish the maintenance and repair work, worry about enemy action and concern or anxiety about the well-being of deployed members. Commanders can address these stressors by encouraging non-deployed members to practice good stress management strategies (exercise, proper nutrition and rest, proper time management) and conducting unit stress management briefings. Commanders may provide non-deployed personnel with information about the status of forward base members, while continuing to focus on morale building and unit cohesion.

At forward bases, all Service personnel will face the brunt of the war pitch; i.e. exposure to actual enemy air strikes, moving about and working in areas where undetected, unexploded enemy bombs may be present, working in limited space of blast-pens and camouflaged shelters, return of

damaged aircraft after war sorties, heightened need for faster aircraft turn-around, frequent handling of a variety of lethal aircraft weaponry, likely shortage of facilities and ground equipments due to different detachments working in limited time span and spaces, error-prone working environment due to short-cuts to meet higher operational demands, the dire need for perfection, anticipated enemy action, failing tempers of supervisors, the necessity to work at night in camouflaged and dimly lit environments etc. They will also be often demoralized by the return of aircraft formations with 'missing members'. For these personnel, there are some common stressors on a day-to-day basis, including: working in harsh climates/terrain, inadequate living conditions due to overcrowding of forward bases, long duty hours and inadequate rest, problems with supervisors and other seniors, perceived ineffectiveness of leadership, perceived threat from conventional, biological, or chemical weapons, high workload, domestic worries, personal problems etc. Stressors may accumulate and result in fatigue, sleep deprivation, and depression. Under substantial stress, persons may experience difficulty in focusing their attention and remembering what they were taught in training. Members who are exposed to enemy air-raids are likely to experience anxiety that may exacerbate day-to-day stressors of the working environment. Negative behaviors that emerge from exposure related stress and accompanying problems include substance abuse, recklessness, malingering, desertion and fraternization.

Commanders themselves will be hard-pressed to run the show effectively under trying circumstances, with severe *resource crunch*. They may employ some general measures to promote resilience in the environment. Resilience fosters heightened alertness, strength, tolerance and endurance to loss and discomfort. Resilience can be built through strong personal bonding between aircrew and ground crew and pride of identification with the unit's mission. Steps to foster resilience

include: promoting unit cohesion, showing personal interest in the welfare of the individual, the promise to look after their families, excellent training and preparation, conducting challenging training scenarios to bolster individuals' self-confidence and confidence in their leaders, keeping members of small teams working together under their leaders, fostering physical fitness exercises and team building. Building relationships is a critical necessity during war. Close working ties with medics, and mental health providers are essential in the hostilities environment. One study has reported about the development and validation of the Unit Needs Assessment, created to determine trends in the mental health and well-being of soldiers to guide the delivery of mental health care support to meet the unique needs of the unit, and the improvement and validation of a psychological screening instrument to identify soldiers experiencing psychological distress as early as possible and to ensure they receive the help they need [24].

Preventive measures can greatly reduce distress in day-to-day challenges during hostilities. Coping mechanisms and methods of stress reduction include building social support, time with peers, time for recreation and time for rest. Commanders should learn to keep stress among unit members to the level where it enhances performance. This can be done through: keeping the personnel well informed about their current situation, how they are doing and what their goals are, putting potential dangers in the perspective of how the unit will overcome them, not giving unit members unrealistic reassurances, sharing burdens such as austere living conditions or physically demanding tasks with the personnel, understanding each person's strengths and weaknesses, identifying the best-qualified individuals to perform key tasks, welcoming new arrivals into the group and linking them up with appropriate peers (buddy

system), encouraging time management with focus on the 'here and now', setting priorities and

promoting unit centered social interaction outside duty hours when appropriate.

Junior commanders should be trained to take over when senior leaders need sleep. Physical fitness should be encouraged. Being fit does increase self-confidence and delays the onset of muscular fatigue. Basic amenities such as showers, hot water, palatable food and tolerable living conditions should be provided. Regular schedules should be established for unit members to ensure time for rest. Informal 'team debriefings' after difficult actions (in training and in combat) should be conducted by bringing the combatants together to talk about what happened (when the situation permits), while the events are still fresh in their mind. Critical Incident Stress Management by trained medical/psychological personnel needs to be considered. Combatants should be encouraged to rely on their individual faith-system and spirituality, as appropriate.

Combat stress is defined as any psychological/ physiological reaction manifested by a variety of symptoms during or immediately following combat, when the individual is rendered *temporarily* dysfunctional. It is considered a normal reaction and is not a psychiatric disorder. Pre-disposing and precipitating factors include fear, lack of sleep, shelter, food, exposure to environmental changes, loss, uncertainty, fatigue, lack of emotional/social support, lack of information, interference by others with autonomy, impersonal authoritarian treatment and lack of follow-up support in weeks following exposure. Table 1 outlines the adaptive and maladaptive combat stress behaviors.

Management of combat stress

Adaptive Stress Reactions	Combat and Operational Stress Reactions	Misconduct Stress Behaviors and Criminal Acts
<ul style="list-style-type: none"> • Unit cohesion • Loyalty to "buddies" / peers • Loyalty to Leaders • Identification with unit • Sense of eliteness • Improved sense of Self • Enhanced Relationships • Sense of mission • Alertness, vigilance • Exceptional strength and Endurance • Increased tolerance to • Heroic acts • Courage • Self- 	<ul style="list-style-type: none"> • Hyper-alertness • Fear, anxiety • Irritability, anger, rage • Grief, self-doubt, guilt • Physical stress complaints • Inattention, carelessness • Loss of confidence • Loss of hope and faith • Depression, insomnia • Impaired duty performance • Frustrations, outbursts • Impaired mobility • Unit cohesion • Loyalty to "buddies" / peers • Loyalty to Leaders • Identification with unit • Sense of eliteness • Improved sense of Self • Enhanced Relationships • Sense of mission • Alertness vigilance • Heroic acts • Courage • Self-sacrifice 	<ul style="list-style-type: none"> • Alcohol and drug abuse • Recklessness, indiscipline, • Excessive sick report • Negligent disease, injury • Shirking, malingering • Combat refusal • Self inflicted wounds • Going absent without leave, desertion • Inattention, carelessness • Loss of confidence • Loss of hope and faith • Depression, insomnia • Impaired duty • Alcohol and drug abuse • Recklessness, indiscipline, • Excessive sick report • Negligent disease, injury • Shirking, malingering • Combat refusal • Self inflicted wounds • Going absent without leave,

1: Stress behaviors in combat and other operations

management goals. Primary prevention consists of controlling stressors known to increase dysfunctional stress behaviours such as first experience of combat, insufficient realistic training, sleep/food deprivation, inadequate information or no sense of purpose and home front worries. Secondary prevention involves realistic training, sleep/food deprivation, inadequate information or no sense of purpose and home front warning signs/symptoms of combat stress, preventing spread of dysfunctional behaviour by segregation and reintegrating recovered individuals back into their units. Tertiary prevention involves training individuals in critical event and end of tour debriefings and monitoring for post traumatic stress disorder (PTSD) symptoms. Over the past decade, however, there has been considerable controversy over the provision of early psychological support to personnel. Both, critical incident stress management (CISM) and psychological debriefing (PD) have come under scrutiny and criticism (26). Identification involves recognizing symptoms and making correct differential diagnoses. Management goals should include quick return to duty, not labelling the individual and educating people that combat stress is a normal reaction to a traumatic event.

diagnoses. Management goals should include quick return to duty, not labelling the individual and educating people that combat stress is a normal reaction to a traumatic event. In the US military, a DoD Directive (6490.5) introduced in 1999 deals specifically with combat stress control (CSC). CSC units are military units within or attached to a parent medical unit, consisting of CSC and administrative support personnel. It is supported by the parent medical unit and can function independently in concert with the operational platform. CSC units have been deployed in the Gulf War, Somalia, Haiti, Guantanamo Bay, Bosnia, and Kosovo. They have been very flexible and useful mental health tools for commanders in both combat and peacekeeping operations during the past decade [27].

Intervention modalities should be conducted
Intervention modalities should be conducted

according to the BICEPS-principles of Brevity, Immediacy, Centrality, Expectancy, Proximity and Simplicity. Brevity is keeping the treatment brief and no more than 72 hours. Immediacy is early identification and intervention. Centrality is treating all in one location which is close to the unit; and placing all individuals with similar symptoms together in one group. Expectancy is letting the individual know that this is a temporary condition and that he/ she should return to duty as soon as possible. Proximity is to encourage contact between the individual and the unit/friends. Simplicity is keeping the interventions simple by not medicating, giving clear/adequate instructions, and providing rest and proper nutrition. Verbalization and participation in diversionary activities should be encouraged. He/ she should be treated with compassion versus sympathy, individual dignity needs to be respected and return to duty should be the focus. Individuals should be part of a supportive group who are able to share their experiences. Restore confidence by keeping the individual active, providing a supportive environment and reinforcing self identity; medication should be avoided. However, when an individual has combat stress or neuropsychiatric symptoms which make him or her too disruptive to manage, the person may be evacuated to the next echelon of care and needs to be hospitalized only when individual's safety is uncertain. Prior to evacuation, give the individual a clear expectation that he or she will improve, be careful not to let "unmanageability" become an escape route.

Studies also indicate psychological risk and protective factors for PTSD. Compared to veterans with PTSD, those without the disorder had lower neuroticism and psychoticism scores, were more internal in their locus of control orientation, and were more likely to have shown ability to provide structure to the Vietnam experience. The finding that veterans with high combat experience but without PTSD evidenced less neuroticism than low combat veterans

without PTSD provides evidence that those who did not develop the disorder despite high exposure to combat stress are individuals with exceptional emotional strength and resilience [28]. Higher proportions of approach-based coping in the war zone were related to lower levels of psychological symptoms [29]. Multiple regression results indicated that lifetime trauma, combat exposure, and avoidant coping were strongly related to PTSD symptoms [30].

Post-hostilities stressors

Post-hostilities phase would witness concerns for unit members and their families over changes in family life such as, confirmed war casualties, missing personnel in action, potential conflict with family members or others about inheritance, life-insurance settlements and other financial matters, rehabilitation of severely injured combatants and most importantly, the issue of resettlement of war widows and their families. At higher levels, a concerted effort must be made with the help of the national media, to absorb as many AF martyrs' dependents into public sector and private sector enterprises, for their rehabilitation. The media has an important, positive role to play in this issue. Commanders can also help by: being empathic to the personnel concerned, educating families that there will be changes, being attentive to reactions and subsequent behavior that members may experience such as guilt, anger, substance abuse, and depression; normalizing the fact that re-adaptation may take time. Long term positive and negative stress reactions are shown in Table 2 [31]. There must be no hesitation to employ the services of competent mental health professionals, where the requirement manifests.

It is important to recognize that, despite the potential stress and cost of hostilities, at another

Table 2: Long Term Stress Reactions

Positive stress reaction	Negative stress reaction
Adaptive stress reaction	Intrusive, painful memories (flashbacks)
Posttraumatic improved relationships	Trouble sleeping, bad dreams
Renewed hope for life	Guilt about things done or not done
Improved appreciation for life	Social isolation, withdrawal, alienation
Enhanced sense of personal strength	Jumpiness, startle responses, anxiety
Spiritual development	Alcohol or drug misuse,

misconduct
 Depression Problems in trusting intimate as well as social relationships

level it can be a highly rewarding experience for the 1AF personnel. For some, it may be the most memorable experience of their career. Some could have developed a group/unit identity, cohesion, gained significant friendships, attained confidence in skills and ability to adapt, lead and fight a war and to know an enemy at close quarters. It also affords the commanders an opportunity to test their new doctrines and weaponry. The combatants might have a sense of satisfaction to be engaged in some unique missions, having been a part of the IAF when it was called upon to fulfill a major national requirement. Also, many combatants might be considered as national heroes [25].

Recommendations for psychological support

Several recommendations for the practice of psychological support before, during and after hostilities have been made in various air forces in other countries such as US, Europe and Israel [25, 32]. They are suitably modified for the IAF environment and are enumerated below:

- (a) Every service member has own individual readiness accountability. All IAF personnel are individually accountable for taking necessary steps to maintain their psychological fitness as an essential component of fighting fitness, and all must be made aware of this.
- (b) Assessment of both individual mission fitness. Personnel should be provided opportunity to report problems in the area of mission fitness. Instruments and tools to assess individual mission

fitness must be implemented. Assessment should aim at distinguishing between temporary and chronic problems, thus avoiding stigmatizing of personnel. During hostilities, fitness-monitoring at personnel level is required to detect any adverse reactions which could affect their performance. Monitoring should be carried out continuously, both formally and informally by colleagues, superiors and professional support personnel. Ways to assess individual well-being post hostilities can be provided. Middle and long term monitoring of physical and psychological well-being for all service personnel must be undertaken. The requirement for during and post-conflict psychological group support to the expected impact of the hostilities should also be considered especially when it has negatively influenced the effectiveness of the group.

(c) Psychological support needs to be organized at different levels. There are three levels of support available in incident handling. Firstly, peer support which is informal and on the spot. Secondly, some individuals in every unit must receive specific training in incident handling. They can act as individual and unit level stress risk assessors, advise their commanders and can conduct basic interventions. They should know when to bring in more specialized support from psychological support professionals. They can be embedded within the formation and can be officers from any branch. However their selection is very important and it should be based on required personal such as being empathic, unbiased and just.

Psychologists, psychiatrists, social workers, sociologists and psychiatric nurses may be described as psychological support professionals, comprising the third level. They would advise military commanders on the well-being of the personnel. Psychological support should not be limited to individual mental health. Military psychologists involved in mental readiness should have a combination of clinical and occupational skills to advise military leaders regarding morale and other problems at the unit/station level. Since support professionals are very few in the IAF, help can be drawn from Defence Institute of Psychological Research, National Institute of Mental Health and Neurological Sciences, Tata Institute of Social Studies or other private agencies. These professionals can be trained in the military scenario and since they have long tenures at their institutions, a pool of such support would always be available.

- (d) Issues of psychological support as part of education and training. Consensus should be reached on necessary topics of psycho-education in military education at all levels and in pre-hostilities training on psychological support. Competencies for giving advice, conducting education, delivering treatment, carrying out assessments and interventions, and referring on, must be identified, made aware and explicit. Psychological support professionals may experience conflicting roles between supporting individual service personnel and supporting the unit.
- (e) Home front psychological support. Coping capabilities of IAF families are important in supporting the combatant. Therefore, home front support means providing education, information and advice, means of communication and offering psychological or social support. Home front support should be

organized well in advance of the hostilities and is clearly linked to operational readiness. This support must be continued throughout the hostilities. Provision of information to the home front must be tailored to a non-military audience. A structured rehabilitation programme for IAF personnel and their families must be planned, with further long-term support tailored to cater for their needs.

Conclusion

This paper provides military leaders, in particular, information about stress and practical guidelines on psychological support to enhance the effectiveness of airpower in modern war. The coming decades may witness the exercise of airpower (independently) by all the three Services. Because military commanders at all levels play key roles in sustaining the mental readiness of service personnel under their command and fostering morale on the home front, they remain the focus of interest of this paper. Hostilities do have major implications for military formations, military personnel and their families. Past experiences suggest that military leaders can make a significant difference in mediating the relationship between psychological support professionals and military personnel and their families. Review of supporting literature shows many gaps in the available research. In some instances there is a lack of hard evidence to support some of the choices that have been made for psychological support in modern military operations. Yet, despite the lack of empirical evidence, it is natural that military commanders still expect reliable and informed advice from the specialists.

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