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Prevalence of psychological disorders and coping strategies among employees of information technology: A narrative review

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Abstract:

Software professionals in Information Technology industry are prone to almost all the recognized risk factors for health hazards. Urbanization and globalization have significantly changed health profile of employees of information technology industries. Both IT and ICT related professionals mostly remain at a constant pressure to deliver services efficiently and have to be cost effective which lead to anxiety, stress, frustration, depression and burnout. The current review summarizes the literature in relation to prevalence of psychological disorders along with the evidence of various lifestyle modification programs implemented to restore psycho-physiological health among IT professionals. PubMed and Google Scholar databases were used to search literature related to present narrative review. Literature search included following key-words: Anxiety, Depression, Mental Health, Burnout, Well Being, IT professionals, Software professionals, Yoga, Meditation, Relaxation, Physical Activity, and Mindfulness. The review focuses on the importance of alternative therapies, especially physical activity, yoga and meditation. There are many studies that demonstrates efficacy of yoga practices in stress, depression and several other psychological disorders. Therefore, yoga can be implemented in IT professionals to cope up with stress. There is need to conduct large number of clinical trials to prove the efficacy of yoga among IT professionals.

Keywords: *IT professionals, yoga, meditation, physical activity, stress*

Introduction:

Over the past decade information technology has become the fastest growing industry in India due to globalization of Indian economy and favorable government policies. It is estimated that India's IT workforce accounts for 4.36 million employees and contributed a share of around eight percent to the GDP of the country in fiscal year 2020. Although information technology improves productivity

but have negative consequences on employee's health. Both IT and ICT related professionals mostly remain at a constant pressure to deliver services efficiently and have to be cost effective which may lead to anxiety, stress, frustration, depression and burnout(1,2,3). Additionally, it has been observed that higher rates of professional stress and depression could lead to increase alcohol abuse and incidence of psychiatric disorders among software professionals (4). Several factors are involved in development of psycho-physiological disorders in these employees such as long working hours, night shifts, target achievement and work overload (5). Also, IT professionals have to interact with clients for understanding the business process and update their knowledge to survive the competition. These competitive circumstances put tremendous pressure on these professionals resulting in occupational stress. Further, many research studies indicated association of long working hours with sleep disturbances (6,7, 8,9) depression (10, 11,12), anxiety (13,14) and cardiovascular diseases (15,16,17,18).

Software professionals in Information Technology industry are prone to almost all the recognized risk factors for health hazards. Urbanization and globalization have significantly changed health profile of employees of information technology industries. Mostly, software engineers start working at the of age of 25-30 years and are prone to coronary diseases (19, 20,21). IT professionals have to sit for long hours (sometimes including day and night completing the project), cannot get regular sleep as they have to work in odd hours, do not have sufficient time and resources to do exercises. Further, the sudden increase in wealth among I.T professionals puts this group at higher vulnerability to develop habits like smoking, taking drugs and consuming alcohol due to stress or peer pressure. Most of the professionals do time bound work and cannot be involved actively in family activities and, thus may not get adequate social support and respect.

It is believed that through implementation of lifestyle modification, alternative therapies and yoga meditation, it is possible to improve psycho-physiological health of IT professionals. The literature related to coping strategies utilized for maintaining optimal health has been discussed in order to provide future research.

Methods:

This narrative review presents the literature in relation to prevalence of psychological disorders along with the evidence of various lifestyle modification programs implemented to restore psycho-physiological health among IT professionals. PubMed and Google Scholar databases were used to search literature related to present narrative review. Literature search included following keywords: Anxiety, Depression, Mental Health, Burnout, Well Being, IT professionals, Software professionals, Yoga, Meditation, Relaxation, Physical Activity, Mindfulness.

Prevalence of Mental health problems:

It is known that software engineers working in the Information Technology (IT) sectors and IT enabled services sectors are predisposed to development of anxiety, depression and stress. Padma et al. (2015) reported that around 54% of IT and BPO employees had depression, insomnia and anxiety (22). Similarly, a survey study conducted in Delhi and South India showed that software engineers experience moderate to high overall stress due to their nature of work and commitment to achieve targets within specified time (23, 24, 25). Professional operating visual display terminals work around 8 to 11 hours and most likely had feelings of burnout, anxiety, depression and stress (26, 27). A study conducted by Aziz (2004) on 264 women working in information technology field indicated that resource inadequacy as the most potent role stressor followed by role overload and personal inadequacy (28). Further, it was found that though the pay structure in IT professionals is relatively higher compared with other sectors, the working conditions are more stressful (29). Stress is a common problem experienced by professionals irrespective of age, gender, marital status and years of service. A study conducted on 200 software professionals in Pakistan showed that the age group 25-28 years' experience highest stress and the reason could be role overload and changing technology (30). Nayak (2014) reported high level of anxiety in software professionals as compared to mechanical professionals (31). A cross-sectional study conducted at Delhi showed significant association between depression and marital status, family type, alcohol use, substance use, and shift work among software professionals (32). It is evident from a study conducted on 535 IT professionals that depression and anxiety is prevalent and also could lead to mental health issues (33). Although several studies indicate prevalence of anxiety, depression and stress among IT professionals but none of the studies reported further consequences that might lead to psychiatric disorders. Mental health issues affect many professionals and are a cause of a dropping out of work. In fact, poor mental health is a major contributing factor that may lead to range of physical ailments such as hypertension, diabetes and cardiovascular diseases. WHO led study reported that negative work environment may lead to mental health problems, substance use, absenteeism and loss of productivity. A study conducted by Shoji et al. indicated that 62% of software engineers had mental complaints and 31% showed mental ill-health (34). Ranjith et al. demonstrated that the IT professionals aged between 20-30 years scored positive for social dysfunction, anxiety, depression and loss of confidence (35). Further, several studies showed that visual display terminal operators have impaired mental health (36, 37, 38).

Burnout:

Burnout is a syndrome resulting from chronic workplace stress. It is a psychological process characterized by feeling of emptiness, frustration and exhaustion (39, 40). A cross-sectional study

conducted in India on 900 software developers indicated that females are more prone to develop burnout than males (41). Further, a study conducted in China showed that 91.1% of participants using VDT experienced moderate or severe occupational stress and 39.1% had feeling of burnout more than once a month (42). Similar results were evident in another study wherein participants reported higher levels of anxiety, depression, occupational stress and job burnout (26, 27). The job burnout was found to be common in professionals may be due to overwork, stressful situations and exposed to VDT for longer duration (43, 44). Additionally, it has been found that working hours are positively related to appearance of burnout and also presence of musculoskeletal disorders in middle and upper management population (45). Organizational climate also plays an important role in burnout of employees. In fact, one study showed that quality of organizational climate is related to high levels of burnout and dissatisfaction among call center operators (46). Similar results were evident in other studies wherein call center employees found to be emotionally exhausted and burnout (47, 48, 49).

Sleep Quality:

Adequate sleep is needed for individuals to maintain good health and avoid risk of developing various psycho-physiological disorders. In fact, it is evident from past studies that reduced sleep is linked with several physical and mental health problems (50, 51). A study conducted in Singapore in 464 employees indicated prevalence of poor sleep quality and short sleep (52). Similarly, a cross sectional survey among 498 operative engineers from Michigan showed that poor sleep quality was associated with younger age, higher pain, and depressive symptoms (53). Further, a study conducted in USA showed that work overload was positively associated with poor sleep quality (54). In addition, it has been found that work of 6 hour or more on visual display terminal is related to insomnia (55).

These studies indicate prevalence of various psycho-physiological disorders amongst IT professionals and emphasize the need to assess, diagnose and implement appropriate non-pharmacological intervention to prevent development of further disease or disorder.

Coping Strategies:

Given the prevalence of psycho-physiological disorders such as stress, depression, burnout, sleep quality, hypertension, and various metabolic disorders among IT employees there is need to develop appropriate training interventions to treat these disorders. In fact, there are several training interventions such as yoga, mindfulness meditation, physical activities etc. have been designed and introduced in working population.

Yoga and mindfulness meditation:

Yoga is now accepted throughout the world as preventive complementary and alternative therapy for overcoming various psycho-physiological disorders. Several research studies have

established the beneficial effects of yoga practices. A study conducted to see the effect of eight to sixteen weeks of yoga on ninety individuals who experienced moderate to high stress showed significant reduction in stress, anxiety, depression and insomnia (56). Similar findings were reported with five-week Yin yoga and mindfulness on stress and worry (57). Further, a recent systematic review showed that workplace yoga intervention is effective in reducing perceived stress in employees (58). Even a one week of residential yoga training was found to be effective in reducing occupation stress in school principals (59). Several studies have shown that yoga and meditation can reduce stress, anxiety, mood disturbance, performance anxiety and improve quality of life across in healthy as well as individuals suffering from various disease or disorders (60, 61, 62, 63, 64, 65). The compounding evidence suggests that yoga practices lead to reduction of stress, anxiety and depression. Moreover, several studies conducted among medical and paramedical professionals showed that yoga practices are effective in preventing burnout (66, 67, 68, 69, 70).

Physical Activity/Exercise:

Various alternative therapies have been experimented to alleviate anxiety, stress, depression and burnout. An increasing number of scientific studies suggests positive effect of exercise on various psychological disorders. A study conducted on 49 participants aged 19 to 68 years showed that four weeks of cardiovascular exercise could reduce psychological distress, perceived stress and emotional exhaustion and improved wellbeing (71). Gerbera et al (2013) indicated that exercise reduce stress and prevent development of depression (72). Planned and structured physical exercise programs have shown positive impact on stress (73, 74). Further, several systematic and meta-analyses showed association between exercise and stress. A study on 111 healthy men and women revealed that regular exercise protects against negative emotions of stress (75). Similarly, high intensity exercise training for ten weeks among 147 adolescents showed positive effects on well-being (76). Moreover, it is evident from a study that exercise and stress management training was effective in reducing emotional distress and markers of cardiovascular diseases (77).

Discussion:

Psychological issues such as anxiety, stress, depression, burnout is common among IT professionals. Numerous studies indicate that these psychological issues are due to long working hours, work overload, shift duties and tremendous pressure to achieve targets (2,10, 13, 12). The sedentary work and longtime exposure to computer screen in these professionals also lead to musculoskeletal pain.

The research shows prevalence of various psycho-physiological issues among IT professionals. Nevertheless, numerous studies have reported alternative coping mechanisms to overcome these problems. In fact, non-pharmacological interventions such as aerobic exercises,

physical activities, yoga, meditation etc, have been found to be effective in maintaining optimal health in varied population. However, there are very few studies conducted so far to find out the efficacy of yoga among IT professionals. Yoga practices can be done at workplace as it does not require any special equipment. Further, now a days chair yoga is gaining popularity and could be beneficial for IT professionals. 15 minutes of yoga and guided meditation showed significant reduction in perceived stress, heart rate and respiration rate (78). The possible mechanism may be decrease in sympathetic activity and increase in parasympathetic activity (79). This in turn improves sense of well-being and reduction in anxiety, stress and depression (80, 81). Looking at the psycho-physiological issues experienced by IT professionals it is advisable that these professionals should adapt a simple and effective alternative intervention.

Conclusion:

Physical activity, aerobic exercises and yoga could be used as an alternative therapy in IT professionals. There are many studies that demonstrates efficacy of yoga practices in stress, depression and several other psychological disorders. Therefore, yoga can be implemented in IT professionals to cope up with stress. There is need to conduct large number of clinical trials to prove the efficacy of yoga among IT professionals.

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