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Research Article

JOURNAL OF WOMENS HEALTH AND DEVELOPMENT

ISSN: 2644-2884

Surviving Tactics of Medical Interns Countering Long Working Hours: A Systematic Review

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Abstract

Back-ground: The stressful working environment and prolonged working hours of medical interns; leads to lack of concentration, distress and higher level of fatigue leading to self-perceived medical error.

Objective: This review was done to find out various coping tactics used by medical residents of diverse specialties, to overcome the effect of long working hours.

Method: This literature search has been done on the protocols of PRISMA-P; (preferred reported items for systematic review and meta-analysis protocol). A comprehensive literature search has been done to understand the impact of extended duty time, on doctors in training, and finally the counter measures used by them. Data was collected from published research articles, on three databases (PubMed, ERIC and Psycinfo) and one academic search engine, google scholar. All full text English articles published in peer reviewed journals were included. Studies having Qualsyst score of ≥ 0.6 were included in literature review.

Results: Four main themes have emerged; including, problem-based coping, maladaptive coping, coping at personal level and work-related coping skills. Studies showed that physician used coping mechanism including acceptance, mindfulness, spirituality, taking breaks from work, socializing, provocative & leisure activities. Physicians manage their stress at individual level by strategic planning for future, meditation, exercise, gratitude and healthy relationships with friends and family, rarely, mental health care is required. Moreover, self-sacrifices and re-balancing personal priorities were basic coping at workplace.

Conclusion: A collaborated program of cognitive behavioral, mindfulness and coping skills should be adopted, implemented, and studied for residents at post-graduate level.

Keywords: Coping tactics; Medical interns; Fatigue; Long working hours

Introduction

In emergency situations, provision of safe and precise health services, has been globally considered as the responsibility of health providers. Frequently, the brunt of such care, especially in out of hour situation, has been managed by trainee doctors [1]. Training is a challenging era of one's life. Highly demanding job with little control and reward, would produces more exhaustion and anxiety in resident doctors. Extensive working shifts results in chronic sleep deprivation, which, ominously diminishes the attentiveness of doctors, adversely affecting their temperament, hence, performance [2].

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Citation: Shamaila Manzoor, Idrees Anwar, Aisha Rafi. Surviving Tactics of Medical Interns Countering Long Working Hours: A Systematic Review. Journal of Women's Health and Development 5 (2022): 257-263.

Received: September 30, 2022
Accepted: October 13, 2022
Published: November 04, 2022

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DOI:10.26502/fjwhd.2644-28840097

The stressful working environment and prolonged working hours leads to lack of concentration, distress and higher level of fatigue which is independently associated with self-perceived medical error [3,4]. Exhausted, inexperienced, and poorly supervised junior doctors make more mistakes than those who are more rested. Similarly, higher degree of emotional exhaustion and demoralization resulted in more chances of medical errors [5]. Therefore, extensive review of literature was done to find the effect of long working hours on resident doctors of different specialties, and coping strategies employed by them. As, some high acuity disciplines render physicians more physically and mentally exhausted as compared to their colleagues from other disciplines. A comprehensive literature search has been done to understand the impact of extended duty time, on doctors in training, and finally the counter measures used by them. Moreover, various coping measures based on 'coping theory' of Lazarus and Folkman has been considered in detail. This theory helped to learn human behaviors. Coping is the human approach to solve problems. Coping describes the thoughts and actions used by a person in stressful environment. There are many factors both helpful and harmful to shape up the response of an individual for any stressful condition [6]. Eight categories have been identified: "confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape avoidance, planful problem solving and positive re-appraisal". Therefore, by effective coping strategies, residents can cope their performance shortcomings. Further, the categorization of coping measures and their role in professional grooming of apprentice doctors has been studied. The objective of this literature review is to find various coping strategies used by residents of surgical and non-surgical specialities, to overcome long working hours, for provision of quality health services.

Research Question

What are various coping tactics employed by the residents of various surgical & non-surgical specialties, to overcome the effects of prolonged working hours?

The main emphasis of literature search was to recognize the coping strategies used by the interns of surgical (General Surgery, Gynecology/obstetrics & Anesthesia) & non-surgical disciplines (General Medicine, Pediatrics & Radiology) to overcome the effects of long working hours. A comprehensive literature search has been done to understand the impact of extended duty time, on doctors in training, and finally the counter measures used by them. Moreover, it would help to set the direction of future post-graduate training and curriculum to cope with common problems experienced by the medical interns. Systematic literature search was carried out to identify the articles most relevant to objective of study.

Methodology

Search strategy

Data was collected from published research from last 18 years on three databases (PubMed, ERIC and Psycinfo) and one academic search engine, that is, google scholar. This literature search has been done on the protocols of PRISMA-P; "(preferred reported items for systematic review and meta-analysis protocol) [7]. After themes identification, critical appraisal of the articles has been done. Studies having Qualsyst percentage of ≥ 60% / score of ≥ 0.6 were included in critical appraisal. Several key terms: comprising key words and synonyms, with or without Boolean operators were used to improve the sensitivity of results. Literature search was enriched by using ancestry approach.

Inclusion Criteria of articles for literature review:

All those full text articles were included in review which were published in last 20 years in peer reviewed journals. Moreover, original articles, AMEE guides, national and international articles, meta-analysis & systematic review. All were published in English language. Whereas, only abstracts, conference proceedings, citations, thesis & dissertation plus articles other than English language were excluded.

Problem/emotion focused coping skills

The most popular strategy in majority of studies was working through stress or coping with source of stress, which eases accomplishment of goal (deciding actions) that is, focusing on problem and trying to solve it till resolution. The less preferred measure was emotion-based coping (reducing the emotional consequence of stress) that assist in handling the sensitive response to stressors, like use of humor to alleviate the situation [8, 9].However, emotion focused strategy that is, talking with colleagues, time with family & friends, leisure activities and exercising is related with less emotive enervation. This is consistent with psychological concepts that taking intervals from job, leisure activities, switching off intellectually and emotional detachment from work during off job time has positive benefit for workers [10]. This strategy is more prevalent in conscientious personalities, mainly female physicians [11]. Involvement in extra-curricular activities, acceptance and active coping has related with less burn-out [12]. Studies showed that both these emotions focused, and problem focused tactics became the established habits of doctors to sacrifice their personal desires over the professional demands [13].

Table 1: Key words related to topic of study in databases and search engine

Key Terms	Synonyms
Coping tactics	Survival skill
Fatigue	Feeling exhaustion
Medical interns	Doctors in training
Long working hours	Extended working time

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Table 2: Articles found using key terms & Synonyms.

Key terms used	Number of articles found in different data bases			
	ERIC	PUBMED	Psych info	Google scholar
Coping tactics	377	4777	158	1,140,000
Fatigue	124	27620	298	3,810,000
Medical residents	21	164	72	100,000
Long working hour	185	337	35	5,210,000

Table 3: Articles found using Boolean operators.

Key words	Number of articles found in following data bases			
	ERIC	PUBMED	Psych info	Google scholar
Coping tactics OR survival skills AND fatigue OR feeling exhausted	71	4807	15	17,000
Coping tactics AND fatigue AND medical interns OR doctor in training	__	26248	26	16,600
Survival skill AND long work hours OR extended work time AND doctor in training	4	73	2	18,300
Coping tactics OR survival Skill AND medical interns	6,406	4	__	18,400
Survival skill AND feeling exhausted AND medical interns training	__	__	__	17,200
Coping tactics AND fatigue AND medical interns AND Long work hours OR extended work time	__	5,832	__	1,990
Coping tactics OR Survival skill AND fatigue AND Long work hours OR extended work time AND Medical interns	1	8	1	1,950
Coping tactics AND fatigue OR exhaustion AND long working hours AND medical resident	__	1	__	1,280

Mendeley referencing software was used for storing and referencing of articles as per requirement.

Maladaptive coping skills

When there is an imbalance between job demands and one's capacity to cope, the situation becomes traumatic [14]. For instance, emotional exhaustion, high work stress and long work hours leads to maladaptive coping strategy [9]. This maladaptive coping strategy is more common in junior doctors and inversely related to length of service and number of patients entertained. Similarly, impact on health of resident, like, headaches, excessive nervousness, ulcers & gastritis plus sleep disorders are more common among residents using maladaptive coping skills [14]. Moreover, lack of training to face patient death related ethical issues generated anxiety & depression in resident physician. They may feel unvalued because they are recipient of anxieties and resentments. Their self-esteem suffers, so, they react by exhibiting anger towards patients and bitterness to superiors with further harm to their self and patients [15]. On the other hand, some physicians opt denial, disengagement & self-blame when they feel work over-load or difficult patient interaction. Commonly, these individuals having high negative affectivity and they are more prone to high emotional exhaustion and depersonalization [12, 16]. Therefore, the coping styles used by anyone is dependent on their specific personality type. This denial, however, can be balanced by disengaging them from situation or taking time out. High level of depersonalization and lack of accomplishment is associated with high level of burn-out syndrome and escape avoidance is common in these individuals [17]. Younger physicians with little job experience circumvents avoidance oriented coping style [11]. Nevertheless, positive coping strategies are more effective than the personality trait or type of stress encountered [16].

Coping skills at personal level

The biological circadian rhythm is being disturbed during extended duties & on-call night shifts, therefore, extensive working shifts result in chronic sleep deprivation, which, ominously diminishes the attentiveness of doctors, adversely affecting their temperament, hence, performance [2]. Following strategies have been used for staying awake, like, chemicals (tobacco, caffeine and medication), dietary habits (snacks), raised activity level (keep moving and busy), and sleep management techniques like power naps. Adopting healthy eating habits as good breakfast, cutting down carbs, taking snacks at night shifts to stay awake [18]. Other behavioral activities as showering & splashing plus listening music to reduce fatigue and stress. Moreover, cognitive behavioral techniques, mindfulness and stress management techniques, reflections, shared experiences, resilience training was found helpful in reducing stress of residents(19). Physicians manage their stress at individual level by strategic planning for future, taking time out, meditation, exercise, gratitude and healthy relationships with friends and family, rarely, mental health care is required [9]. Nevertheless,

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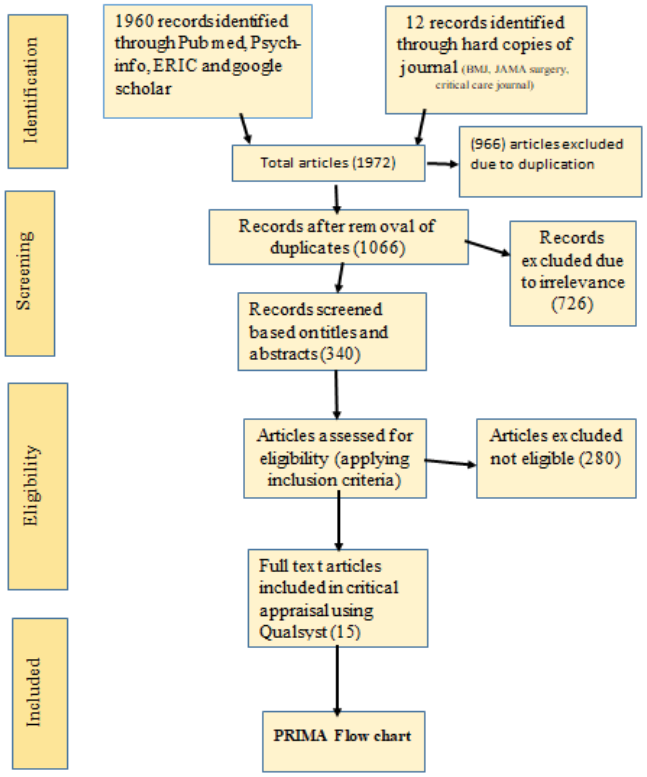
professional development would occur by self- sacrifices and re-balancing personal priorities [13].

Work related coping skills

Physicians burn out has been discussed a lot but no standardized curriculum in resident's medical education has been introduced to counter it. A cultural change is needed to educate about wellness, about preventive and pro-vocative approach and emphasize resiliency. A culture of wellness education and resilience training is mandatory to address physician wellness and optimize self-care [20]. Resident's emotional maturity, provocative coping and humility should be incorporated in the selection criteria, in addition, to board scores, recommendations and interviews [21]. Moreover, self-sacrifices and re balancing personal priorities should be added in training programs of resident's well-being Burnout, coping, and spirituality among internal medicine resident physicians [22]. Work related stressors could be controlled by provision of wellness initiative, workshop on stress management, provision of concierge services and coaching of mentoring services along with and employee assistance programs [22]. Excessive workload, long working hours, less personal time for family and promotion discrepancies could be managed by revising national health policies. This study suggested intervention require national level (working hour regulation) and effective alterations at official level, that is provision of rest room for naps, scheduling of shifts according to principles of circadian biology [18]. Changes in work schedule and environment, work task to reduce stress level, mental health training program (this program reduced sick leave by 0.28 points) would be helpful [19]. In addition, adequate staffing, good leadership and support could help to alleviate these factors [23].Unfortunately, there is still no awareness at planning level to integrate the care for medical student's own personal, mental health within the curriculum, either at under-graduate or post-graduate level. Thus, preventing exhaustion and subsequent manifestation of psychiatric disorder [24]. However, a collaborated program of cognitive behavioral therapy, mindfulness and coping skills should be adopted, implemented and studied for residents [25].



After systematic literature review following literature map was created.

Figure 1: Prisma Flow Chart

Finally, it is concluded that four different types of coping strategies (problem/emotion focused, personal, work related, maladaptive) are employed by the resident doctors.

Discussion

Four different types of coping were employed by residents. The foundation of problem/emotion focus coping is based on constructive coping strategies & personal characteristics of a trainee that supports them to fight back against job related stresses and satisfies them for their work. This coping skills is frequently used by medical interns against the commonest effect of prolonged duties, that is, physical and mental exhaustion. Which seriously affects the mental integrity of a future consultant. The positive strategies of accepting, dynamic coping and positive reframing have lower emotional exhaustion and depersonalization ($p < 0.03$). Moreover, residents who seek compromise, actively engage with their inclination thus, productively resolving the issues, having less emotional exhaustion and depersonalization [21]. Naturally, frequent extended duties result in to altered circadian rhythm. However, by using personalized coping technique, this is managed by either taking power naps or drinking plenty of caffeinated drinks. Consulting colleagues or seniors to double check the patient's findings is another skill opted by residents. All these tactics were well supported by literature, as, the counter measures reported by residents of a busy anesthesia unit, were caffeine intake, strategic naps, micro-breaks, controlled exposure to bright or blue enriched light during over night shifts and appropriate use of post -call (recovery sleep) [26]. However, some participants believe in taking micro- breaks (breaks for 10-15 mins) & power naps (sleep for 10-15 mins) to combat tiredness and sleepiness. Whereas, other prefer in seeking refuge in prayer as a part of personal coping. Acceptance, active coping, and spiritual attitudes was associated with lower emotional exhaustion and depersonalization (<0.005) [12]. Similarly, literature review has shown that five groups of strategies were opted by interns on long duties. Which were chemical (tobacco, caffeine, and medication), dietary habits, activity power naps and sleep management. However, these measures may be used either as

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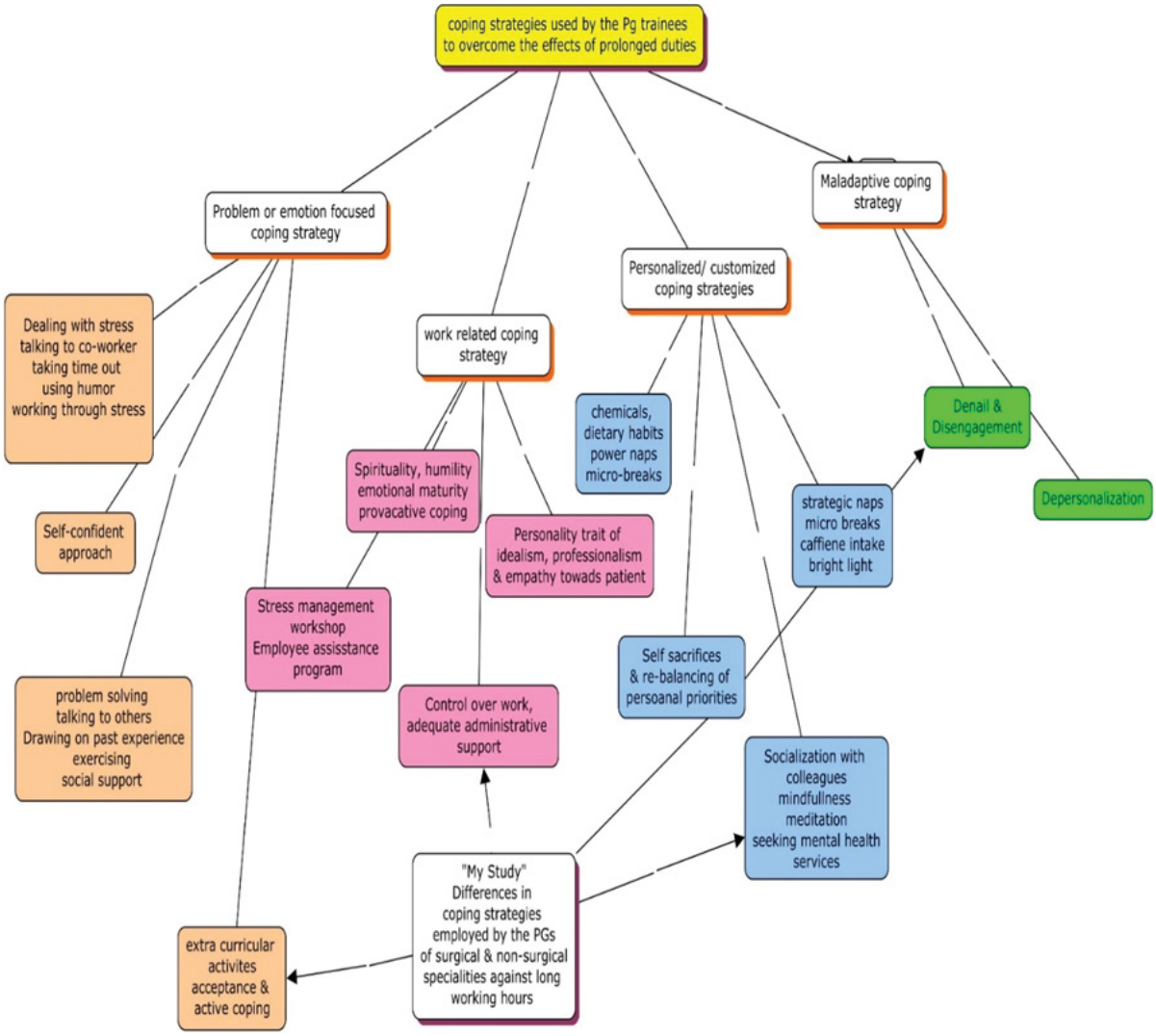

Figure 2: Literature map.

Following four main themes were emerged from the literature search.

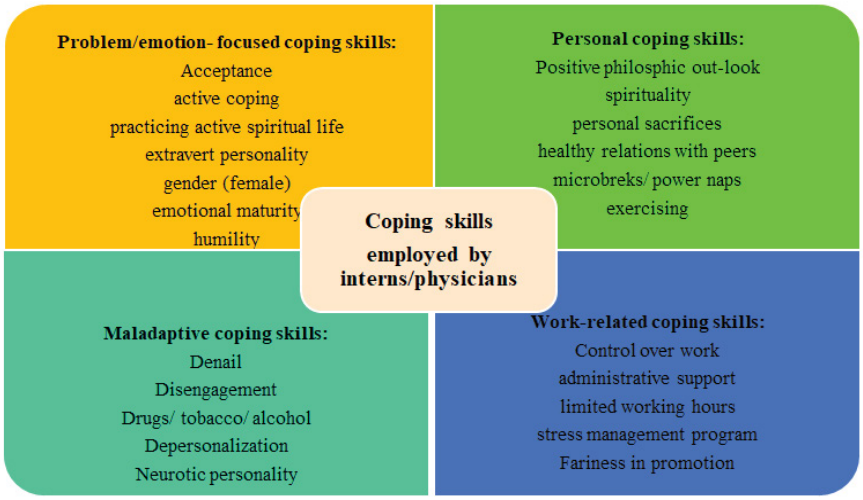

Figure 3: Themes identified from literature review.

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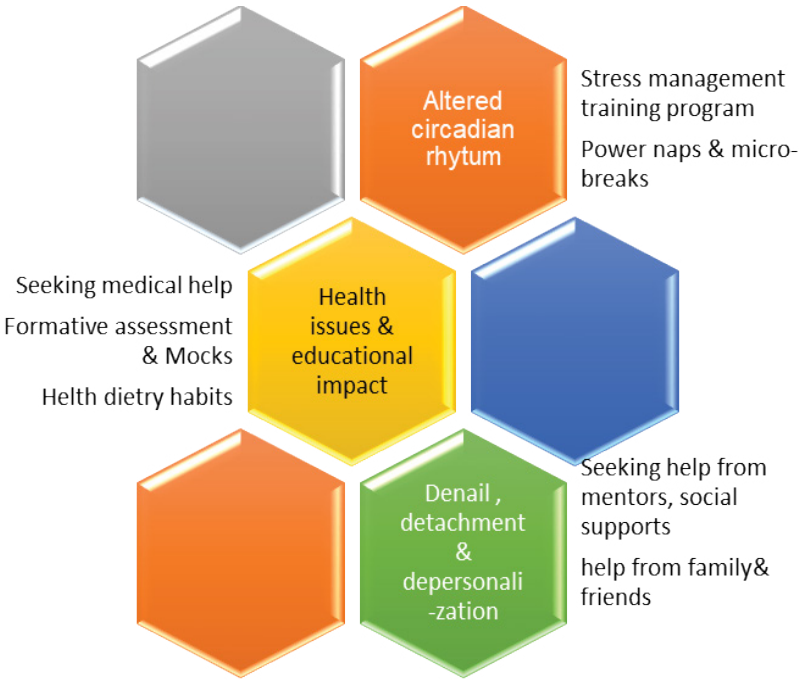

Figure 4: Problems and countermeasures used by intern doctors.

provocative or reactive fashion, depending upon the individual [18]. Personal compromise (over the sleep, tiredness) is commonest coping strategy to deal with the differences, especially with loved ones/spouses [13]. Nevertheless, work related coping encompasses a wide variety of techniques. Obviously, extended duties act as a double-edged sword for resident because neither he can focus on studies by himself, nor he can earn maximum benefits of educational meeting/ rounds and classes due to prolonged duty's exhaustion. Therefore, participants are using following approaches to control the educational set back that includes, compromises on their personal time, sleep & family time, along-with, frequent usage of social media for educational purposes. Additionally, seeking social support has appeared as one of basic theme of this study. This support system comprises of family & friends, colleagues, peers, and staff on duty. Similarly, seeking advice from seniors/ colleagues for patient safety was frequent occurrence, stated by many. This coping mechanism is well supported by the literature. A mix-method study about the physician self-stated coping skills describes that commonest coping strategies include strategic planning for future, taking time out, spending time with family, talking to spouse and physical exercise [9]. This support system has been identified as an important pillar of professional support. Where seniors and colleagues helped their juniors, in times of need (exhaustion, poor alertness or sleepiness). Similarly, leisure time with family and hanging out with friend kept the boat rowing. Likewise, some other strategies used frequently by participants were talking to the co-worker & sharing humor at workplace. Frequent discussions about any interesting case, proved to be emotional & informational support for post graduate trainees. Moreover, debriefing by the consultant after a challenging case, provided unconditional emotional & educational support to the residents as stated by participants. This is backed by evidence from literature that debriefing sessions are emotional and social support for attendees [27].

Conclusion

Physician use coping mechanism including problem solving, emotional coping, maladaptive techniques & opting strategies both at personal and institutional level. These include acceptance, mindfulness, spirituality, taking breaks from work, socializing, provocative & leisure activities. However, these counter-mechanism have been adopted without any proper training/course. A collaborated program of cognitive behavioral therapy, mindfulness and coping skills should be adopted, implemented, and studied for residents at post-graduate level.

Disclaimer

- This systematic review was the part of master's program thesis, titled 'Coping Strategies of Medical Interns' (A mixed methods study). As a part of partial fulfilment of Master's degree in Health Professional Education (MHPE).
- Poster presentation from this systematic review was presented at the International Conference of Medical Education (ICME) 2021, in Malaysia.

Conflict of interest

Nothing to declare.

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