Mental Health in Health Professionals in the COVID-19 Pandemic

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic has posed enormous challenges to the healthcare systems worldwide, which are mainly shouldered by healthcare workers from all professions. This chapter outlines the potential stressors of the COVID-19 pandemic for health professionals and describes possible consequences for their mental health as well as potential interventions and coping strategies. The chapter is based on preliminary research on the psychosocial implications of the COVID-19 pandemic in health professionals and is complemented by findings from previous outbreaks of high-risk infectious diseases. High proportions of healthcare workers report acute symptoms of anxiety, depression, high psychological stress, and insomnia in the context of the COVID-19 pandemic. Coping strategies and self-care on an individual level, interventions on an institutional level such as specific training and institutional support, as well as social and psychological support can help to mitigate psychological strain. Further reliable and prospective studies regarding the mental health of health professionals, as well as further measures to protect their short- and long-term mental health, are required.

Keywords

Coronavirus · COVID-19 · Healthcare · Nurses · Physicians · Psychological distress · Stress

41.1 Introduction

Since the first reports of its occurrence in December of 2019 in Wuhan, China, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which can cause the disease named COVID-19, has grown rapidly to one of the most severe international health issues in the last decades and posed an immense threat to the healthcare systems worldwide (Zhu et al. 2020a). Communities worldwide suffer directly from high infection rates associated with increased mortality, and additionally, the measures to contain the spreading of the virus are associated with further indirect physical and mental health consequences (Bohlken et al. 2020; Helmy et al. 2020; Wang et al. 2020a; Xiang et al. 2020). Health professionals of all professions play a

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crucial role in facing and overcoming the enormous challenges of the COVID-19 pandemic (Xiong and Peng 2020). Dealing with the pandemic comes with multiple stressors on general and profession-specific levels for health professionals (Kang et al. 2020a). Being confronted with those stressors bears the risk of the development of new or the aggravation of pre-existing mental health issues such as symptoms of anxiety, depression, and high psychological stress (Kang et al. 2020a). These mental health strains might not only affect the performance of health professionals in managing the challenges of the COVID-19 pandemic but could also impair their overall well-being and mental health in the long run (Kang et al. 2020a; Mehta et al. 2018). Therefore it should be of top priority to protect the mental health of health professionals as extensively as possible to enable the control of the pandemic as well as to protect the short- and long-term mental health of professionals (Kang et al. 2020a).

In the following, potential common stressors and psychological reactions of health professionals, as well as possible coping and intervention strategies, are described – based on first insights from preliminary research on the psychosocial consequences of the COVID-19 pandemic in health professionals. Evidence from these first studies is complemented with findings from previous outbreaks of high-risk infectious diseases.

41.2 Stress Factors

41.2.1 Stressors Concerning the General Population

Some of the potential adverse and stress-inducing factors of the pandemic are shared by health professionals and the general population (International Federation of Red Cross and Red Crescent Societies 2020; Petzold et al. 2020d). Those factors can relate to both the anticipation of negative impacts and occurring adverse outcomes. Below outlines these potential stressors.

41.2.1.1 Fear of Being Infected with COVID-19

As for the general population, it is likely for health professionals to be afraid of being infected with COVID-19 and to fear the potentially resultant severe illness outcomes for themselves or loved ones (Wu et al. 2020a; IASC 2020). For example, in a study with 1357 healthcare workers from Henan, China, 85% of them reported a pronounced fear of a potential self-infection with the virus (Zhang et al. 2020b). The risk of infecting oneself and others is significantly adverse in a situation where the transmission pathways and consequences of the virus are not yet fully understood (Petzold et al. 2020d; IASC 2020).

41.2.1.2 Misinterpretation of Symptoms of Other Diseases

As COVID-19 is accompanied by symptoms that are present in a wide range of other diseases like cold or influenza (Wang et al. 2020b), which are present in large parts of the populations, at times of the pandemic, the misinterpretation of symptoms of such other diseases as symptoms of COVID-19 may result in pronounced fears of being infected (Petzold et al. 2020d; IASC 2020).

41.2.1.3 Consequences of the Measures to Contain the Spreading of the Virus

Vast parts of the societies worldwide need to cope with the measures that have been installed to reduce the spread of COVID-19 (IASC 2020). Among those are, for example, the caring for family members at home due to the suspension of schools and childcare services; the omission of cultural, sportive, and leisure activities; and the cancellation of vacations or occupational formation (Wu et al. 2020a; IASC 2020). Moreover, feelings of helplessness, boredom, and depressive symptoms due to isolation or quarantine are possible (IASC 2020).

41.2.1.4 Fear of Social Consequences

The fear of social isolation, when associated with the disease and the fear of separation and losing contact with family and friends due to distancing

measurements or isolation/quarantine, is also among the common stressors (Wu et al. 2020a; IASC 2020).

41.2.1.5 Fear of Economic Consequences

Also, potential negative economic consequences due to the pandemic often expose people to fears and worrying (IASC 2020).

41.2.1.6 Unpredictability and Feelings of Helplessness

Like the general population, health professionals need to cope with the highly unpredictable and dynamic situation due to the novelty and lack of information about the virus (Sun et al. 2020; IASC 2020). The pandemic is particularly threatening as to present, there is no vaccine, and COVID-19 can be only treated symptomatically (Shuja et al. 2020; Xiao et al. 2020). Furthermore, the circumstances may require individuals to deal with feelings of helplessness and the inability to protect loved ones from COVID-19 (IASC 2020).

41.2.1.7 Worsening of Pre-Existing Strains

Among individuals with pre-existing health issues or risk factors, the pandemic may put particular strains on physical or mental health (Adams and Walls 2020; Petzold et al. 2020d). For example, the pandemic may lead to a worsening of symptoms of psychological distress or pre-existing mental disorders or results in a reactivation of threatening experiences from previous epidemics or health crises (Adams and Walls 2020; Petzold et al. 2020d).

41.2.2 Stressors Concerning Health Professionals in Particular

Additionally, to those common stressors which apply to the general population, health professionals are confronted with profession-specific stress factors (International Federation of Red Cross and Red Crescent Societies 2020). Besides stressors that already existed before the pandemic (e.g., high workload and high responsibilities), the COVID-19 pandemic may come with new burdening factors and aggravate pre-existing ones. The following presents some factors, especially concerning health professionals working in hospitals.

41.2.2.1 High Occupational Stress

Health professionals report a massive workload, such as longer working hours, high pressure, and more number of patients than usual due to the pandemic as a primary source of physical and psychological strain (Adams and Walls 2020; Cao et al. 2020; El-Hage et al. 2020; IASC 2020).

41.2.2.2 High Exposure Risk

Even with strict safety measures, the infection risk of health professionals working with COVID-19 patients is, on average, higher than that of the general population (Heymann 2020; Strametz et al. 2020; Wang et al. 2020a; Wu et al. 2020a; Xu et al. 2020). It can result in stronger worrying about consequences for one's well-being in case of an infection as well as worrying about infecting family and loved ones with COVID-19 (Adams and Walls 2020; El-Hage et al. 2020; Tsamakis et al. 2020; Wu et al. 2020a) and was the most common reason for health workers to report unwillingness to care for patients diagnosed with COVID-19 in a study with medical staff in Chinese psychiatric hospitals (Shi et al. 2020). Furthermore, insufficient information on the consequences of long-term exposure to COVID-19-infected patients adds strain to this factor (IASC 2020).

41.2.2.3 Stigma and Social Exclusion

Health professionals are confronted (e.g., through verbally and physically assaults and attacks) with the stigmatization attached to people working with COVID-19 patients, e.g., because of concerns of others that the health professionals may be infected and therefore constitute a risk (McKay et al. 2020; IASC 2020). In previous outbreaks of high-risk respiratory infectious diseases (SARS, MERS), perceived stigma also was reported to occur frequently and was a predictor of mental health strains in health professionals (Bell and Wade 2020; Koh et al. 2005; Maunder et al. 2003; Maunder et al. 2006).

41.2.2.4 Strict Safety Measures

The wearing of protective clothing, the permanent need for concentration and vigilance, as well as highly regulated procedural instructions limit spontaneity and autonomy and strains the physical and mental well-being (Adams and Walls 2020; IASC 2020; Petzold et al. 2020d; Poon and Liu 2004). The reduction of physical contact hinders the ability to spend consolidation for patients or colleagues, which might reduce social support that represents a critical factor for mental health (Petzold et al. 2020d; IASC 2020).

41.2.2.5 Separation from Loved Ones

Due to the higher exposure risk and the high workload, healthcare workers often have to keep a distance from loved ones (WHO 2020b; Wu et al. 2020a). For example, health professionals in Chinese hospitals often slept over weeks in the hospital and have been quarantined afterward to avoid cross infections of family members and patients (Wu et al. 2020a). It resulted in separation from their families for weeks and was a commonly reported stress factor (Wu et al. 2020a) and the main reason for negative emotions (Cao et al. 2020).

41.2.2.6 Reduced Social Support

Due to long working hours and stigmatization of health professionals when dealing with COVID-19 patients, health professionals may face a lack of social support (Petzold et al. 2020d; IASC 2020). In the work environment, social support by colleagues might be reduced because of a high workload and transfers to different working environments without the familiar colleagues, which could additionally result in feelings of isolation (Petzold et al. 2020d; Wu et al. 2020a).

41.2.2.7 Reduced Self-Care

Due to a lack of time and energy, healthcare workers might not be able to maintain their self-care (IASC 2020; Petzold et al. 2020d). Mainly a lack of sleep and adequate recovery times are a problem that health professionals are facing in the current pandemic (National Center for PTSD 2020).

41.2.2.8 Dealing with the Intense Emotions of the Patients

Health professionals may be confronted with anger and rage against the government or the healthcare system by patients or their relatives (Chen et al. 2020; McKay et al. 2020; Petzold et al. 2020d). Additionally, healthcare workers might have to deal with an increased rate of patients who die or suffer from severe outcomes of COVID-19 and need to handle the fear and grief of patients and their relatives (Chen et al. 2020; Kang et al. 2020b; National Center for PTSD 2020; Xiong and Peng 2020).

41.2.2.9 Inadequate Preparedness

The rapidly spreading pandemic has surprised the health systems of many countries (WHO 2020c). Therefore, a resource-limited setting due to, e.g., lack of staff, medical devices, and protective equipment, was a common source for strain in healthcare workers (Chung and Yeung 2020; International Council of Nurses 2020). In a study with nurses from China, a lack of knowledge about coping with infectious diseases and respiration devices was reported as a stress factor as well as the pressure to obtain this expertise in a short time (Wu et al. 2020a).

41.2.2.10 Conflicts of Roles and Feelings of Responsibility

The measurements to contain the spreading of the virus, e.g., the closure of schools and daycare institutions for children, might have given rise to role conflicts between family and occupational duties for medical staff because they might have to provide care and home tutoring for their children in addition to their anyhow high workload (Wu et al. 2020a).

41.3 Psychological Strain and Risk and Protective Factors

About the multiple and far-reaching adverse impacts of the pandemic, the occurrence of overburdening, distress, and psychological strain has to be seen as a largely normal reaction to an

exceptional event for the general population as well as for health professionals (IASC 2020). Nevertheless, it is crucial to obtain an overview of how many health professionals are affected by such symptoms, which are the most frequent and most affecting symptoms, and to which extent they exceed the limits to pathological reactions (Pothiawala 2020). Currently, substantial research on the psychological consequences of the COVID-19 pandemic on health professionals is lacking. In the following, we summarize insight from the first studies on this subject. Most of the studies are cross-sectional, which comes with several methodological limitations. Table 41.1 shows an overview of the currently existing studies on the mental health of health professionals in the COVID-19 pandemic. Most of the recent studies concerning those topics have been conducted in China (Bohlken et al. 2020). It remains unclear to which extent these results can be generalized to other populations, and further research on this topic seems urgently needed.

41.3.1 Frequently Occurring Symptoms of Psychological Distress

41.3.1.1 Acute Symptoms

In a study with 911 hospital workers in Italy, 86% reported moderate to severe psychological distress during the COVID-19 outbreak (Bettinsoli et al. 2020). Several surveys with health professionals in China showed consistently high rates of symptoms of psychological strain in response to the COVID-19 pandemic (Bohlken et al. 2020). In a study with medical staff in a specially equipped COVID-19 emergency clinic in Peking (Cao et al. 2020), 19% of the staff reported moderate or severe depressive symptoms. Similar results were obtained in clinics in Hong Kong, with 20% of the staff fulfilling the questionnaire criteria of mild and 15% the criteria for moderate depression (Chung and Yeung 2020). Even higher rates occurred in hospitals in and around Wuhan, the epicenter of the pandemic (Kang et al. 2020b; Lai et al. 2020). Mild depressive symptoms occurred in 34% to 36%, moderate symptoms in 9% up to 22%, and severe symptoms in 6% of the medical and nursery staff.

Besides depressive symptoms, symptoms of anxiety were the most commonly reported symptoms among hospital staff. In a study with clinical first-line medical staff in China (Huang et al. 2020), 23% showed symptoms of anxiety (16% mild, 2% moderate, 5% severe). In Wuhan, the rates have again been even higher, with 44% reported anxiety (32% mild, 7% moderate, and 5% severe symptoms) (Lai et al. 2020). These findings are in line with previous epidemics of infectious diseases with high rates of anxiety in reaction to the epidemics (Xiao et al. 2020).

On scales targeting symptoms of post-traumatic stress, 27% of the surveyed frontline staff from China exceeded the cut-off criteria for post-traumatic stress disorder (National Center for PTSD) during the COVID-19 pandemic (Huang et al. 2020). In a study in Wuhan, China, 37% of the healthcare workers scored on mild, 25% on moderate, and 17% on severe extents of symptoms of post-traumatic stress (Lai et al. 2020).

Problems of sleep have been another frequently reported issue. In qualitative interviews, 30% of the health professionals from Wuhan reported suffering from sleep problems (Wu et al. 2020a). In quantitative surveys, 34–36% of the staff showed symptoms of insomnia (26% mild, 7% moderate, and 1% severe) (Lai et al. 2020; Zhang et al. 2020a). Complaints about loss of appetite (22%) occurred, too, as well as other somatic strains (Wu et al. 2020a).

To sum up, on average, approximately 2–15% of the health professionals reported suffering from severe and urgent treatment requiring symptoms, and more than one third reported to be affected with mild to moderate acute impairments in mental well-being (Bohlken et al. 2020). Those proportions seem to be comparable with first reports regarding the general populations (Li et al. 2020; Sun et al. 2020; Tan et al. 2020). These results stem from cross-sectional studies, which suffer from a lack of baseline assessment before the current pandemic and, therefore, should be interpreted with great caution.

Table 41.1 Overview of studies on the mental health of health professionals in the COVID-19 pandemic

Study	Country	Population	Recruitment period	Sample size	Design	Outcome measures
Bettinsoli et al. (2020)	Italy	Hospital staff, different regions of Italy	March–April 2020	580	Cross-sectional, online questionnaire	BRCS, CSES, GHQ-12, and self-developed items
Cao et al. (2020)	China	Medical workers in a fever clinic in Beijing	?	37	Cross-sectional, interview and questionnaire	Qualitative interview, PHQ-9, and MBI
Chung and Yeung (2020)	China	Hospital staff in Hong Kong	February 2020	69	Cross-sectional, online questionnaire	PHQ-9 and free text items
Huang et al. (2020)	China	Hospital staff in an infectious disease hospital	February 2020	246	Cross-sectional, online questionnaire	SAS and PTSD-SS
Kang et al. (2020b)	China	Doctors and nurses in Wuhan	January – February 2020	994	Cross-sectional, online questionnaire	PHQ-9, GAD-7, ISI, IES-R, and self-developed items
Lai et al. (2020)	China	Health workers in different regions of China	January – February 2020	1257	Cross-sectional, online questionnaire	PHQ-9, GAD-7, ISI, and IES-R
Li et al. (2020)	China	Nurses + general public	February 2020	526 nurses	Cross-sectional, app-based questionnaire	The Chinese version of the vicarious traumatization Questionnaire
Liang et al. (2020)	China	Health workers of a hospital in Guangdong	February 2020	59	Cross-sectional, self-report questionnaire	SDS and SAS
Lu et al. (2020)	China	Health workers of a hospital in Fujian	February 2020	2299	Cross-sectional, online questionnaire	NRS on fear, HAMA, and HAMD
Mo et al. (2020)	China	Nurses in Guangxi	February 2020	180	Cross-sectional, online questionnaire	SOS and SAS
Sun et al. (2020) Preprint	China	Nurses in a Hospital in Henan	January – February 2020	20	Cross-sectional, qualitative interview	Qualitative interview analyzed by Colaizzi's 7-step method
Tan et al. (2020)	Singapore	Health workers from two tertiary institutions in Singapore	February – March 2020	470	Cross-sectional, self-report questionnaire	DASS-21 and IES-R
Wu et al. (2020b)	China	Physicians and nurses in frontline vs. usual wards in Wuhan	March 2020	190	Cross-sectional	MBI
Xiao et al. (2020)	China	Medical staff that treated patients with COVID-19	January – February 2020	180	Cross-sectional, self-report questionnaire	SAS, GSES, SASR, PSQI, and SSRS

Xu et al. (2020)	China	Surgical medical staff at a hospital in Shanghai	January – March 2020	120	Cross-sectional	Anxiety scale, depression score, dream anxiety score, and SF-36
Zhang et al. (2020a)	China	Medical staff from China	January – February 2020	1563	Cross-sectional, app-based questionnaire	ISI, PHQ-9, GAD-7, and IES-R
Zhu et al. (2020b) Preprint	China	Medical staff at Tongji hospital	February 2020	5062	Cross-sectional, online questionnaire	IES-R, PHQ-9, and GAD-7

BRCS Brief Resilience Coping Scale, *CSES* Coping Self-Efficacy Scale, *GHQ-12* General Health Questionnaire-12, *PHQ-9* Patient Health Questionnaire, *MBI* Maslach Burnout Inventory, *SAS* Self-rating Anxiety Scale, *PTSD-SS* Post-traumatic Stress Disorder Scale, *GAD-7* General Anxiety Disorder Questionnaire, *ISI* Insomnia Severity Index, *IES-R* Impact of Event Scale-Revised, *SDS* Zung's Self-Rating Depression Scale, *SAS* Zung's Self-Rating Anxiety Scale, *NRS on fear* Numeric Rating Scale on fear, *HAMA* Hamilton Anxiety Scale, *HAMD* Hamilton Depression Scale, *SOS* Stress Overload Scale, *DASS-21* Depression, Anxiety, and Stress Scales, *GSES* General Self-Efficacy Scale, *SASR* Stanford Acute Stress Reaction Questionnaire, *PSQI* Pittsburgh Sleep Quality Index, *SSRS* Social Support Rate Scale, *SF-36* Short Form Health Survey

41.3.1.2 Long-Term Consequences

Due to the dynamic situation in the current pandemic, research on long-term consequences for health professionals is not available. However, all those reactions and underlying stressors among the COVID-19 pandemic described above are in line with the results from previous outbreaks of infectious diseases (Bai et al. 2004; Bell and Wade 2020; Chen et al. 2006; Chew et al. 2020; Maunder et al. 2003). In interpreting these findings, it is highly relevant to emphasize that the development of a wide range of psychological reactions regarding the circumstances of the COVID-19 pandemic represents a mostly normal response after experiencing an exceptional and straining event (WHO and International Labour Organization 2018; Petzold et al. 2020d) and does not automatically lead to mental disorders.

Longitudinal observations of the psychological reactions to previous outbreaks of high-risk infectious diseases indicate that symptoms of psychological strain, such as anxiety and distress, tend to peak early during outbreaks and are transient for most responders, which means that for the majority, the symptoms resolve as time passes (Bell and Wade 2020; WHO and International Labour Organization 2018; Wu et al. 2008). Several qualitative and cross-sectional quantitative studies underpinned this pattern of initially high levels of psychological strain and decreased levels after the outbreak (Bell and Wade 2020; Lu et al. 2006; Xu et al. 2020). It seems plausible because, during the outbreak, the workload and multiple other factors are probably more prevalent and adverse than in a non-outbreak moment (Xu et al. 2020). Nevertheless, the burden faced by health professionals while working during the COVID-19 pandemic has the potential to result in long-lasting psychological strain and an increased occurrence of mental illnesses such as anxiety disorders, depression, or PTSD in the future (Bell and Wade 2020; Petzold et al. 2020d; Wu et al. 2008). The evidence of previous SARS outbreaks supports this potential risk. SARS outbreak correlated with an increased prevalence of PTSD among hospital staff in Singapore from before to 2 months after the outbreak (from approximately 2% to 8%) (Chan and Huak 2004). One to two years after the resolution of the outbreak, health professionals who worked in SARS-affected hospitals in Toronto, Canada, in 2003, reported significantly more psychological strain than hospital staff without exposure to SARS (International Federation of Red Cross and Red Crescent Societies 2020; Maunder et al. 2003; Maunder et al. 2006). Health professionals of SARS-affected hospitals had elevated signs of chronic stress (30% vs. 19%), depressive and anxiety symptoms (45% vs. 30%), and problematic behavior such as increased consumption of tobacco and alcohol (21% vs. 13%). Moreover, the study showed long-term influences on their daily work, e.g., shortening of work hours (9% vs. 2%). However, the rates of diagnosed mental diseases such as depression or PTSD were not significantly elevated (Maunder et al. 2008; Maunder et al. 2006). It indicates the conclusion that long-term effects of outbreaks of infectious diseases tend to be common but often stay in the range of subsyndromal stress response syndromes (Lancee et al. 2008; Maunder et al. 2008). Furthermore, common symptoms seem to change over time. A study in Taiwan found in the aftermath of the SARS outbreak symptoms of depression and avoidance predominantly, whereas during the initial phase of the outbreak, somatic and cognitive symptoms of anxiety and feelings of extreme vulnerability and distress dominated (Chong et al. 2004).

41.3.2 Risk and Protective Factors

On average, female health professionals show a significantly higher symptom severity and frequency than males in several studies (Barati et al. 2020; Bettinsoli et al. 2020; Huang et al. 2020; Kang et al. 2020b; Kisely et al. 2020; Lai et al. 2020; Zhu et al. 2020b). A preprint reported, for example, a significant *hazard ratio* (HR) = 1.32 of women compared to men among the COVID-19 pandemic (Zhu et al. 2020b). Due to the vast body of evidence that shows that women tend to be more vulnerable for affective and anxiety disorders in general, those results may be explained by pre-existing differences rather than

by differences in pandemic-related reactions (Wang et al. 2020a). Furthermore, women may be stronger affected by the consequences of the public measures to contain the spreading of the virus (such as school closures) because they seem to be more often in charge of caring for their family members at home than men, regardless of their occupational workload (IASC 2020).

According to the results of studies in China and Italy, the younger age of health professionals seems to be a risk factor for psychological strain (Bettinsoli et al. 2020; Kang et al. 2020b). Those findings are in line with the results of previous outbreaks of infectious diseases (Matsuishi et al. 2012; Ricci-Cabello et al. 2020; Sim et al. 2004; Su et al. 2007). Less working experience and a lower sense of preparedness in young health professionals could be a possible partially mediating variable of those results (Matsuishi et al. 2012; Ricci-Cabello et al. 2020).

Nursery staff and medical technicians reported, on average, higher levels of anxiety, depression, and post-traumatic stress than doctors (Huang et al. 2020; Zhu et al. 2020b). These findings are in line with previous studies in hospitals affected with SARS, MERS, or H1N1 influenza which reported elevated levels of psychological strain in nurses (Bell and Wade 2020; Brooks et al. 2018; Matsuishi et al. 2012; Nickell et al. 2004; Phua et al. 2005). These findings may be explained due to nursery staff (and medical technicians) having more and closer contact with patients than doctors, on average, more night-shifts, and maybe other more overburdening working conditions (Bell and Wade 2020; Nickell et al. 2004; Zhang et al. 2020a; Zhu et al. 2020b). Furthermore, doctors expressed, on average, more confidence in their ability to protect themselves and their patients than nurses (Shi et al. 2020), which could be another possible mediator of those findings.

Compared to administration personnel, medical personnel scored on average significantly higher in symptoms of fear, anxiety, and depression in a study in China (Lu et al. 2020). The results of a study in Singapore are standing in contrast to these findings: non-medical personnel in the health system reported more definite symptoms of depression, anxiety, and (post-traumatic) stress than medical staff (Tan et al. 2020). Possible reasons for the latter result may include reduced accessibility of non-medicals to first-hand medical information, adequate training, protective equipment, and formal psychological support (Tan et al. 2020).

Health professionals with more frequent direct exposure to infected patients showed in two studies in Wuhan higher amounts of mental health disturbances than professionals with less exposure (Kang et al. 2020b; Lai et al. 2020; Wu et al. 2009; Zhu et al. 2020b) which is in line with findings of previous epidemic outbreaks (Bell and Wade 2020; Grace et al. 2005; Koh et al. 2005; McAlonan et al. 2007; Ricci-Cabello et al. 2020; Styra et al. 2008; Wu et al. 2009). In contrast, no significant differences in depressive and anxiety symptoms between health professionals working in units for COVID-19 and medical health workers without direct contact with infected patients became apparent in the context of another study conducted in China (Liang et al. 2020). Moreover, in two other studies in the Wuhan area, the frontline workforce showed, on average, fewer symptoms of traumatization, emotional exhaustion, and depersonalization than non-frontline physicians and nursery staff on general wards (Li et al. 2020; Wu et al. 2020b) which is also congruent with some previous findings regarding a SARS outbreak in Hong Kong (Chan et al. 2005). Those latter findings could be due to potentially better support of the special wards, whereas the general wards may somewhat be neglected by the hospital's administration and the government (Wu et al. 2020b). Therefore, it seems important to avoid an underestimation of the mental health burden for health professionals who are not in direct contact with COVID-19 patients and to address them with adequate support, too.

In studies regarding previous outbreaks of highly infectious diseases, the voluntariness of work in high-risk units seems to be relevant. The clinical staff that was conscripted to such units because of human resources showed particularly low levels of mental health (Bell and Wade 2020; Chen et al. 2005).

Concomitant chronic diseases (HR = 1.51) and a history of mental disorders (HR = 3.27) occurred to be substantial risk factors for stress, anxiety, and depression (Wang et al. 2020a; Zhu et al. 2020b), which is congruent with the findings of previous epidemics (Kisely et al. 2020; Styra et al. 2008). Health workers with a confirmed COVID-19 infection reported more severe depressive symptoms than those without infection (Zhu et al. 2020b). Especially being quarantined because of a suspected or confirmed infection seems to be a predictor of psychological distress (Bell and Wade 2020; Marjanovic et al. 2007). Having family members or relatives proved or suspected with COVID-19 was also significantly associated with a substantially higher risk for the psychological strain of health workers (HR = 1.23) (Zhu et al. 2020b) as well as seeing infected colleagues (Bell and Wade 2020).

In studies in previous SARS outbreaks, working experience seems to be a protective factor against psychological strain due to an outbreak (Kisely et al. 2020; Maunder et al. 2008). In contrast, in a study in China, health professionals with more than 10 years of working experience scored higher on stress, anxiety, and depression in the COVID-19 pandemic than those with less experience (HR = 2.02) (Zhu et al. 2020b). This result may be explained by less occupational exhaustion, a higher proportion of vulnerability for severe outcomes of COVID-19, or family status: the majority of healthcare workers with shorter working experience was single and had to face fewer family responsibilities in addition to the high workload (Zhu et al. 2020b). Health workers with children showed higher levels of stress – probably due to more intense family responsibilities, which would be in line with results from previous SARS outbreaks (Kisely et al. 2020; Maunder et al. 2008; Zhu et al. 2020b).

Care provided by the hospital and department administrators was associated with a reduced risk of showing adverse psychological reactions to the pandemic (*odds ratio* (OR) = 0.76) as reported in a study from China (Zhu et al. 2020b). Protective safety measures seem to be an essential protective factor: full coverage of all hospital units with protection equipment and precautionary measures was associated with reduced levels of psychological strain (OR = 0.69) (Zhu et al. 2020b). Both findings are in line with results from previous SARS outbreaks in which support of colleagues and supervisors and specialized training and safety measures were associated with lower psychological distress (Huremović 2019; Ricci-Cabello et al. 2020). Preparedness in terms of safety equipment, knowledge about the virus and safety measures, appropriate training in hospitals, and the confidence to be familiar with the risks and the protection measures were furthermore associated with a higher willingness to care for patients with COVID-19 (Ricci-Cabello et al. 2020; Shi et al. 2020).

The access to supporting psychological material seems to be a protective factor: severe mental health disturbances were associated with less access to online psychological resources (Kang et al. 2020b). Although distressed health professionals' access to mental healthcare services is limited, the majority evaluated such services as important resources to alleviate acute health disturbances (Kang et al. 2020b).

In a study with hospital staff in Wuhan, regular exercise seemed to help to alleviate adverse psychological impact caused by catastrophic events as the exercise was associated with a lower risk for anxiety symptoms (OR = 0.71) (Zhu et al. 2020b). It is congruent with previous research, which emphasized the anxiolytic and stress-buffering effect of physical activity (Petzold et al. 2020b).

Self-efficacy negatively correlated with anxiety and insomnia among healthcare workers in Chinese hospitals (Xiao et al. 2020). Self-efficacy, therefore, seems to be of help to cope with massive workloads with high risks for physical and mental strains (Xiao et al. 2020).

An overview of potential risk and protective factors regarding the psychological consequences of the COVID-19 pandemic on the mental health of health professionals is given in Fig. 41.1.

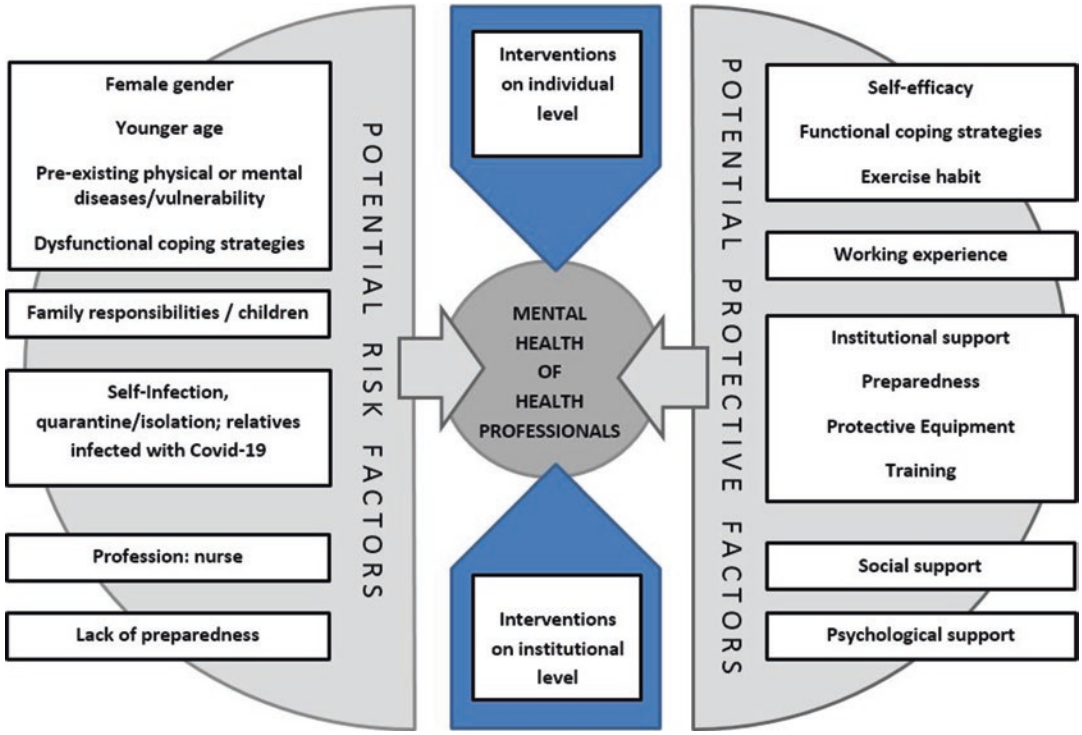

Fig. 41.1 Potential risk and protective factors for the mental health of health professionals

41.4 Coping and Interventions

To maintain essential healthcare services during the COVID-19 pandemic and to protect the short- and long-term mental health of health professionals, adequate coping and intervention strategies are required (Bao et al. 2020; Chung and Yeung 2020; Kang et al. 2020a; Pothiawala 2020). Self-care strategies on an individual level, as well as interventions on a macro-level such as institutional support, should be implemented as early as possible (Maunder et al. 2008; National Center for PTSD 2020; Pothiawala 2020; Xu et al. 2020). In the following, some potentially adaptive strategies are described.

41.4.1 Consideration of Basic Needs

Despite all the demands coming with the COVID-19 pandemic, the basic needs of the health professionals should be considered and addressed by the healthcare workers themselves as well as by their leaders (Adams and Walls 2020; Petzold et al. 2020d). Especially concerning the highly demanding conditions, it is even more critical for health professionals to take rest times sufficiently and regularly, to sleep enough, and to eat sufficiently and healthily (Petzold et al. 2020d). Organizational institutions should ensure that employees have adequate opportunities to take breaks and recover and to carry out necessary self-care measures, even in phases of high workload, and employees should make use of such opportunities (IASC 2020; Petzold et al. 2020c). About the frequent occurrence of insomnia and the importance of sleep quality as a critical indicator of physical and mental health, among other interventions, adaptive shift planning to facilitate regular sleep times should be taken into account (Xiao et al. 2020).

Additionally, physical activity is an important, effective, and frequently underestimated tool to facilitate coping with straining situations (Zhu

et al. 2020b). Concerning its stress-alleviating effect in a study in Wuhan (Zhu et al. 2020b) and previous research (Petzold et al. 2020b; Tamminen et al. 2020), regular exercise seems to be an easily affordable and effective coping strategy. In the study, as mentioned earlier from Zhu et al. (2020b), the percentage of healthcare workers who performed regular physical activity was rather low (17%) – therefore, health professionals should be motivated to implement or to maintain physical activity.

41.4.2 Coping Strategies

The range of possible coping strategies among the COVID-19 pandemic is vast (Cao et al. 2020; Sun et al. 2020). It can be helpful for healthcare workers to remember personally adequate and adaptive coping strategies that have helped them to overcome past crises and to reapply them (Petzold et al. 2020d; WHO 2020b).

Dysfunctional and unhealthy coping strategies such as the use of tobacco, alcohol, illicit drugs, or excessive amounts of prescription drugs should be avoided (National Center for PTSD 2020; Petzold et al. 2020d; WHO 2020b). Especially concerning the high proportion of health professionals who tend to use dysfunctional strategies to cope with potential traumatizing events, it becomes even more important to emphasize this aspect and to enhance the usage of adaptive coping strategies (Strametz et al. 2020).

41.4.3 Restriction of Worrying Media Coverage

Rest times should be used for recovering and getting some distance from the omnipresent topic of COVID-19 (WHO 2020b). Keeping oneself informed in regular intervals is important, but, for example, excessive consumption of media and especially the confrontation with misinformation and rumors is counterproductive for mental health (Ullah and Amin 2020; WHO 2020b).

41.4.4 Self-Efficacy

Self-efficacy seems to be an essential tool in coping with multiple stressors (Xiao et al. 2020). To increase the sense of self-efficacy of health professionals, institutions should strengthen the training of psychological skills in general and specifically regarding the particular demands of the COVID-19 pandemic (Huang et al. 2020; National Center for PTSD 2020). Furthermore, health professionals should acknowledge their personal and occupational strengths and avoid negatively assessing and degrading their work contributions and their functioning in personal life (National Center for PTSD 2020). About enhancing occupation-related self-efficacy, it is furthermore important to provide all relevant information about COVID-19 and to ensure adequate occupational training, e.g., the correct application of safety measures or the handling of patients during the pandemic (Barati et al. 2020; Pincha Baduge et al. 2018).

Concerning previous epidemics (H1N1 influenza), a study in Toronto succeeded to enhance the self-efficacy and other factors of resilience and preparedness of healthcare workers with an intervention (from 35% of the staff feeling able to cope with influenza before the training to 76% afterward) (Aiello et al. 2011). A similar program could be envisaged for COVID-19.

41.4.5 Acceptance of Negative Emotions

It appears to be of great importance that health professionals accept their negative emotions like fear, sadness, or anger and attribute them as a normal reaction to an extraordinary situation rather than trying to suppress them (Petzold et al. 2020d; WHO 2020b). Avoidance of negative emotions and the use of coping strategies based on avoidance rather than the problem or emotional-based coping have shown to be associated with adverse long-term consequences in health workers (Edwards et al. 2002; Sim et al. 2004). Furthermore, specific fear regarding infectious diseases might increase when health work-

ers are trying to suppress negative emotions instead of accepting them. A longitudinal study during the Zika outbreak in the USA in 2016 from Dillard et al. (2018) showed in a sample of 561 women in the USA that the suppression of fear might contribute to a future increase in fear, which might constitute a self-reinforcing vicious cycle of fear and suppression (Fig. 41.2).

41.4.6 Self-Concept of Health Professionals in the Pandemic

The COVID-19 pandemic might result in psychological distress and negative emotions like helplessness, sadness, or anger, which in turn might lead to cognitive dissonance in the self-concept of the health professionals. Health professionals might have a strong perception of themselves as a helper, being mentally stable, and having solutions for the problems of other people. In the current circumstances, feelings of helplessness, being overwhelmed, or the wish for being helped might arise. This might lead health professionals to question their self-concept as a health professional and results in psychological distress and reduced self-confidence (Petzold et al. 2020a). In this regard, it seems to be of utmost importance for health professionals to understand that feelings of stress and other negative emotions are not a reflection of a lack of competence concerning the fulfillment of their duties (IASC 2020). In this regard, it is essential for health professionals to engage in self-care and attach great importance to the fulfillment of their own basic needs, especially in times with increased workload, psychological distress, and reduced continuity (WHO 2020b). Self-care reducing thoughts like: "It would be selfish to take time to rest" or "The needs of survivors are more important than the needs of helpers" should be avoided (National Center for PTSD 2020).

41.4.7 Social Support

Social support can occur on different levels, for example, family members, friends, colleagues, supervisors, as well as the society, in general, can deploy social support (Petzold et al. 2020c). Social support through family and friends was found to be of great help to cope with the strains and challenges of the pandemic (Su et al. 2007; Xiao et al. 2020). In a cross-sectional observational study with medical staff treating patients with COVID-19 infection by Xiao et al. (Xiao et al. 2020), the amount of social support was significantly positively associated with the levels of self-efficacy and sleep quality and negatively associated with anxiety and distress. In qualitative interviews, contact with family members via video chat or telephone was named as an efficient coping strategy (Cao et al. 2020). Conversations with colleagues were also reported to be helpful (Cao et al. 2020). These findings are in line with

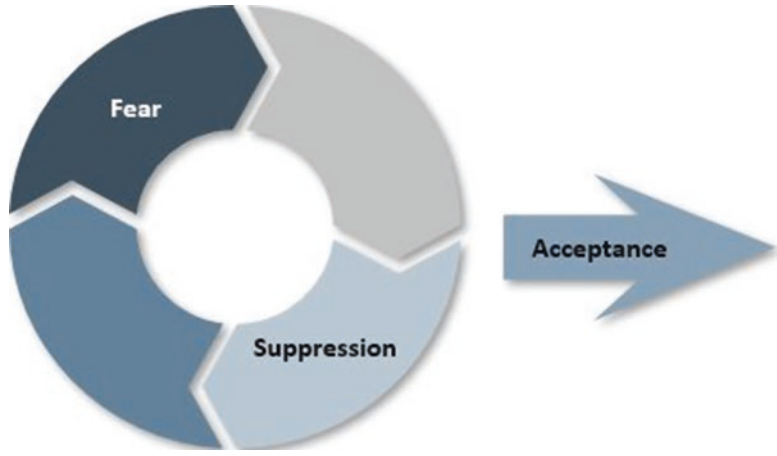

Fig. 41.2 Self-reinforcing vicious cycle of fear and suppression

previous research, which underpins the protective role of social support (Mo et al. 2020).

Thus, it is vital to mobilize and strengthen the social support system of health professionals and to animate them to use it actively (Mo et al. 2020). In terms of work schedules, enough time should be provided for healthcare workers to stay in contact with their families and friends, especially via telephone and web-based communication during isolation (Mo et al. 2020; Petzold et al. 2020c).

Furthermore, the broader society should try to support health professionals. For example, community staff may assist the healthcare workers in terms of childcare services or the completion of everyday tasks (Wu et al. 2020a). Furthermore, society might be able to provide support through showing appreciation for the work of health professionals and through following rules and recommendations to contain the spreading of the virus and to prevent an overburdening of the healthcare system (Kang et al. 2020a; WHO 2020b).

41.4.8 Seeking Professional Support

As health professionals are very likely to experience psychological distress in connection with their work during the COVID-19 pandemic, it seems to be of particular importance for them to seek social and professional support when needed (IASC 2020; Petzold et al. 2020d; WHO 2020b). It might be especially difficult for health professionals as there is still stigmatization toward mental health problems in health professionals (Horsfall et al. 2010; Thornicroft et al. 2007). Since stigmatization toward mental health problems can prevent individuals from seeking support (Clement et al. 2015; Pothiawala 2020), this might hinder health professionals from seeking support from their colleagues, supervisors, or professional treatment, when needed. Therefore, the normalization of the emotional responses in health professionals during the COVID-19 pandemic plays an essential role in this context as well (Petzold et al. 2020d). Fostering self-acceptance and self-forgiving in health professionals in this context might, therefore, be of central importance, as these factors were shown to be associated with reduced stigma and increased mental health, e.g., in firefighters exposed to traumatic events (Carpenter et al. 2020).

Psychological crisis interventions inside organizational institutions (e.g., psychological response teams in the hospital's units) should be provided to health professionals (Chung and Yeung 2020) as well as the access to outside psychological or psychosocial support opportunities (IASC 2020). Furthermore, in this context, anonym and easily accessible psychological support via apps, chat, or telephone hotlines seems to be a promising option (Bao et al. 2020; Cao et al. 2020; Chung and Yeung 2020). For example, only a relatively small amount of healthcare workers in Wuhan participated in counseling or psychotherapy (18%), but half of the staff had accessed online psychological resources (e.g., regarding mental health self-help strategies) (Kang et al. 2020b).

41.4.9 Continuity and Sense of Coherence

Previous research on disaster management resilience and the coping of individuals with psychological distress argues that the concept of continuity plays an important role in maintaining mental health (Omer and Alon 1994). The perception of meaningful continuity includes several aspects in the life of a person which seem stable and predictable for the individual, for example, functional continuity (the conception of being able to maintain routines in one's daily life) or social continuity (stability in social relationships and social roles) (Lahad and Rogel 2004). The concept of continuity is somewhat related to the concept of sense of coherence (Antonovsky 1987). A sense of coherence means the ability of an individual to "make sense of the world" (Antonovsky 1987). The current COVID-19 pandemic has the potential to reduce the sense of coherence in health professionals due to the rapidly changing situation with a lack of scientific

evidence regarding the virus, its treatment, and the consequences for the health professionals. It also might disrupt the perception of continuity, for example, through changing teams and roles, reduced social contacts, and changes in the work environment. It might result in psychological distress among health professionals. Therefore, approaches to foster a sense of coherence and perception of continuity among health professionals might play a vital role in strengthening their resilience and coping with the pandemic situation. In this context, fostering information and communication on the current scientific evidence (to enhance a sense of coherence) and focusing on maintaining or re-establishing as much predictability in the everyday work of health professionals as possible (to strengthen the perception of continuity) might be a promising approach to help them cope with the situation.

41.4.10 Preparedness

As a lack of preparedness seems to be a factor of risk and a reason for strain, there should be organizational effort to provide sufficient formal and informal training (Mak et al. 2009; National Center for PTSD 2020; Olesen et al. 2020; Rubin et al. 2016), for example, on specific details about the virus, its transmission, the use of protective equipment, and ethical decision-making, e.g., regarding surge capacity issues (Greenberg et al. 2020; National Center for PTSD 2020).

Moreover, sufficient protective equipment should be provided to reduce the objective infection risk of the healthcare workers as well as the subjective risk perception and the associated psychological strain (Gee and Skovdal 2017; National Center for PTSD 2020; Zhu et al. 2020b). For example, a SARS prevention program in Taiwan succeeded in reducing symptoms of anxiety, depression, and insomnia in nursery staff by providing a higher preparedness (Chen et al. 2006).

Accurate information updates about all relevant aspects and precise and unambiguous communication should be provided to all staff to avoid worries due to uncertainties and to create a sense of control (Maunder et al. 2003; Petzold et al. 2020d; WHO 2020b).

41.4.11 Institutional Support

Besides the already mentioned contributions of institutions and team leaders in health facilities, leadership should continuously keep an eye on the mental distress of health professionals. They should create an atmosphere in which they can communicate about experienced psychological strain (Adams and Walls 2020; WHO 2020b). Enabling collegial support and reciprocal communication opportunities are necessary for this context as well as providing access to mental health and psychosocial support services (Greenberg et al. 2020; Greenberg et al. 2015; Lee et al. 2005; WHO 2020b). It is essential to prevent the stigmatization of psychological support and to emphasize the experience of psychological strain as a mostly normal reaction to the high and adverse demands of the COVID-19 pandemic (International Federation of Red Cross and Red Crescent Societies 2020). Stress and psychological strain should be taken seriously, and protecting health professionals from these strains should be given high priority (Petzold et al. 2020d).

Moreover, leaders should be role-models for self-care and should emphasize the importance of self-care strategies to mitigate stress (Adams and Walls 2020; WHO 2020b). They have much responsibility and are also subject to multiple stressors due to the pandemic and should, therefore, pay attention to their own mental well-being and adequate dealing with stress (Petzold et al. 2020d).

Besides the desirable strive of health professionals to use somewhat functional strategies, the organizational institutions on the macro-level may be able to facilitate this. As enhanced organizational support and sufficient and trustworthy safety equipment predicted lower levels of dysfunctional coping strategies such as avoidance behavior, emotional exhaustion, and excessive anger in a previous SARS outbreak, addressing these issues on the institutional level seems to be

of importance (Marjanovic et al. 2007; Phua et al. 2005).

In a study in China, a heavy workload was named as the main reason for psychological strain due to the pandemic, and doctors and nursery staff sought additional staff to reduce their overburdening workload (Cao et al. 2020). Therefore, organizational and governmental institutions should try to identify additional workforce capacity to reduce the workload by distributing it on more individuals (WHO 2020a). Transparent allocation of roles and tasks should be ensured and regularly adapted to changing circumstances (Petzold et al. 2020d). For example, nursery staff in a study in China reported various and unclear duties as a stressor and sought for a more specified task division (Cao et al. 2020).

Team leaders and healthcare institutions, in general, should convey appreciation for the exceptional and important performance of health professionals during the pandemic, as this can play an essential protective role concerning mental health in times of crisis (International Federation of Red Cross and Red Crescent Societies 2020; Khalid et al. 2016; Petzold et al. 2020d; Wong et al. 2012; Wu et al. 2020a).

Especially healthcare workers with an elevated risk for psychological strain should be in the focus of attention for interventions to reduce strain (Adams and Walls 2020; Huang et al. 2020; Lai et al. 2020), but all health professionals should be taken into account (WHO 2020b). Keeping all staff protected from elevated mental health burden and chronic stress to the highest degree possible will maintain and enhance their capacity to fulfill their roles (WHO 2020b). In this context, one should not forget that the COVID-19 pandemic and the related exceptional demands for the healthcare systems worldwide will not disappear overnight, and governments and societies should focus more on long-term solutions for upholding a sufficient occupational capacity than concentrating on minor, short-term responses to the crisis (WHO 2020b).

41.5 Conclusion

To sum up, health professionals have to face multiple stressors on general and profession-specific levels due to the COVID-19 pandemic. High proportions of healthcare workers reported acute symptoms of anxiety, depression, high psychological stress, and insomnia in the context of the pandemic. Studies of the long-term consequences are lacking, but a transient trend can be expected for most healthcare workers. Several coping strategies and self-care on an individual level, interventions on an institutional level such as specific training and institutional support, as well as social support and psychological support seem to be of help to mitigate mental strain.

The generalizability of the results has some limitations. For example, a limitation can be inferred from the fact that the majority of studies regarding the mental health of health professionals rely on observational cross-sectional data, which does not allow any causal conclusions. Especially the frequent lack (or only retrospective collection) of data before the outbreak of COVID-19 and the lack of adequate control groups reduce generalizability. Moreover, not all studies provide sufficient sample sizes for reliable interpretations, and most studies rely on data gained from self-report questionnaires, an approach that bears an additional risk for bias. Because the healthcare systems and the exposure/affectedness with COVID-19 and the governmental measures differ remarkably from country to country, it is essential to keep in mind that the universal generalization of findings of national studies is limited. Moreover, there is only a low number of studies on this topic in general and also a particular lack of studies regarding ambulatory health professionals in the pandemic (Bohlken et al. 2020). Moreover, in general, more generalizable, reliable, and longitudinal studies are required in the future to assess the consequences of the COVID-19 pandemic on the mental health of health professionals more reliably and comprehensively.

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