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Does Pandemic Anxiety Affect Urology Health Care Workers?

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Abstract
Purpose: To assess anxiety, stress level, and perception of safety during the coronavirus disease 2019 (COVID-19) pandemic in health care workers (HCWs) of one of Germany's largest urology university clinics. ***Methods:*** A cross-sectional study among urological HCWs was performed. HCWs were surveyed for anxiety about the pandemic, stress level and current workload, fear of coronavirus infection, current perception of safety at work, and attitude towards protective equipment and tests for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). ***Results:*** Sixty-three HCWs filled in the questionnaire. Overall anxiety of infection with COVID-19 is at a median of 4.7 with no statistically significant difference between nurses and physicians ($p = 0.0749$). Safety at work reaches a median of 6 out of 10. In fact, the highest fear in 56.7% (31/63) of the personnel is to get infected by a colleague tested positive for SARS-CoV-2 despite wearing surgical face masks. A proportion of 55.7 and 74.6% highly favor swabs for SARS-CoV-2 on a regular basis in HCWs and patients, respectively ($p = 0.0001$). Workload in the urology department is clearly reduced during the pandemic (physicians 39.3% vs. nurses 32.2%, $p = 0.0001$) and 57.4% do not feel distress at all; only 27.9% express mental distress. ***Conclusion:*** During the pandemic, urology HCWs perceive lower burden by workload and deem themselves at low risk of infection. However, the greatest anxiety is related to infection by a SARS-CoV-2-positive colleague, despite reciprocal protection by surgical face masks. This highlights a relevant mental stress and uncertainty towards management of infected HCWs, calling for increased education and psychological support.

Introduction

The rapid global spread of the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) led to the declaration of a pandemic by the World Health Organization in March 2020 [1]. To date, globally over 3 million people have been infected and over 200,000 deaths have been reported due to coronavirus disease 2019 (COVID-19) [2].

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First dramatic COVID-19 developments in the health care systems of the initially affected European countries, such as Italy and Spain, led to rapid adoption of new standard operating procedures to protect patients and health care workers (HCWs) from SARS-CoV-2 in the clinical routine in our academic institution in southern Germany. For instance, protective surgical masks are obligatory for everyone entering the hospital, with restricted entrance and temperature checks for all patients. An institutional emergency task force provides staff members with daily status updates and changes of the new standard operating procedures. Specific intensive care units and wards have been created to separate COVID-19 patients from other patients and ambulant surgery facilities have been converted into intensive care units to provide enough invasive ventilation facilities. Most resources have been allocated to the treatment of COVID-19 cases, with the exception of emergency care as well as cancer surgery and therapy.

Social distancing is generally requested to minimize the transmission SARS-CoV-2 and has changed the way of working for most of the population in the world during the pandemic. However, HCWs need to pursue their activity close to people and consequently put themselves at high risk of infection. Reports from China have highlighted that until March 2020, 3,300 HCWs were infected by SARS-CoV-2, while in Italy about 20% of the medical personnel seem to have contracted the virus [3–5]. The number of COVID-19-related deaths in HCWs has currently reached >1,000 [3, 4, 6]. For HCWs the current pandemic is not only physically exhausting, but the correlated risks represent also psychological challenges. The constant fear of getting infected and act as vectors to infect family or friends and other patients represent huge burdens. Lack of personal protective equipment of exposed HCWs is an issue in most countries, including Germany, and should be one of the major concerns to alleviate anxiety among this vulnerable group.

The information we have to date concerns mostly HCWs directly involved in the care of SARS-CoV-2 cases, such as emergency care or intensive care personnel. We sought to assess the impact of the pandemic among health care personnel of the urology department. This group is not directly involved in the care of affected patients, but is part of a large academic institution currently on the front line of Germany's response to COVID-19. Detection of safety issues and psychological stress level at work may be useful to directly address the needs of hospital workers and promote efficient patient care during the pandemic.

We therefore present the first survey of HCWs, assessing the perception of current anxiety and safety, personal information about COVID-19, and their opinion towards general testing of patients and HCWs during the peak of the pandemic.

Subjects and Methods

The survey comprised urological staff members of a university hospital in Germany from different areas of responsibility (physicians and nurses). The questionnaire consisted of 21 questions, including two questions related to demographic data. The questionnaire was designed to assess the current status of HCWs during the peak of the pandemic 4 weeks after proclamation of the lockdown in Germany. At that time, social life was still restricted, admission controls before entering hospital were still ongoing, and operations were still restricted for emergency or cancer patients. Anxiety, perceptions of safety, physical and mental exhaustion, and information contentment were assessed on 10-item Likert scales. Further, adapted precautions for COVID-19, anxiety towards COVID-19-positive staff members, as well as attitude towards testing of patients and HCWs were also assessed. Rankings from 0 to 3 were classified as low, from 4 to 6 as medium, and from 7 to 10 as high. Brief demographic data were collected with respect to sex and level of responsibility and the survey was analyzed anonymously.

Participation in the survey was enabled either as hard copy or web-based using the platform SurveyMonkey®. The distribution of the web-based questionnaire was provided through a QRL code.

Statistical analysis was performed using the Mann-Whitney U test and the Wilcoxon rank test on the Prism 8 software (GraphPad Software, San Diego, CA, USA).

Results

Sixty-three out of 94 staff members in total filled in the questionnaire (33 nurses, 30 physicians; 35 females, 23 males, 5 with no specification of the sex).

The overall stress level concerning the pandemic is highly increased in 4 HCWs (6.3%), is increased in half of the participants (49.2%, 31/63), and has not changed or is reduced in 36.5% (23/63) and 7.9% (5/63) of the cases, respectively (Fig. 1a). Depiction of the current stress level as physical and psychological burden shows 57.4% who do not feel distress ("stress-resistant"), while 27.9% carry mainly a "psychological burden" during the pandemic and 13.1% currently feel "exhausted" (both physically and psychologically) (Fig. 1b). Only one participant stated to carry a "physical burden" due to the pandemic (Fig. 1b). In fact, the workload during the pandemic is not increased for urology HCWs; this is particularly true for physicians (reduction of 39.3% for physicians vs. 32.2% for nurses, $p = 0.0001$). The current psychological burden

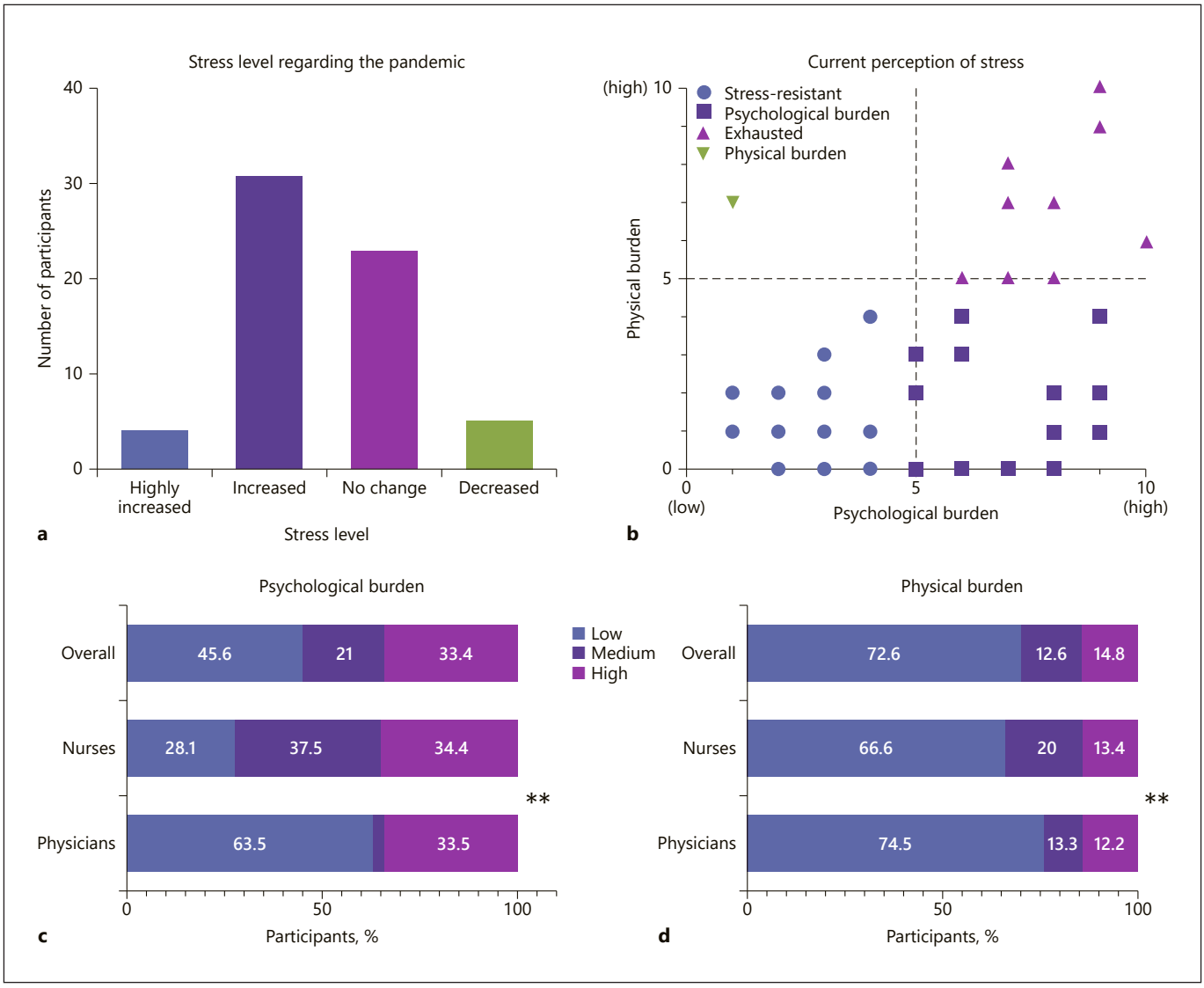

Fig. 1. Stress level as well as psychological and physical burden. **a** Stress level regarding the pandemic. Current perception of stress level was assessed either as decreased, no change, increased, or highly increased. **b** Current perception of stress. Psychological and physical stress is ranked from 0 (no stress) to 10 (maximum stress). Participants are grouped into four categories: stress-resistant, psychological burden, exhausted, and physical burden. **c** Psychological burden. Current status of mental stability is ranked from 0 (no psychological stress) to 10 (psychological exhaustion). ** The current psychological burden is statistically significantly lower in physicians compared to nurses (low in physicians [63.5%] vs. nurses [28.1%], $p = 0.0001$). **d** Physical burden. Current physical status is ranked from 0 (no physical stress) to 10 (physical exhaustion). ** Physical burden is low for 74.5% of physicians and for 66.6% of nurses ($p = 0.0001$).

is clearly lower in physicians compared to nurses (low in physicians [63.5%] vs. nurses [28.1%], $p = 0.0001$) (Fig. 1c). As regards physical burden, it is currently low for 74.5% of physicians and for 66.6% of nurses ($p = 0.0001$) (Fig. 1d).

Overall anxiety of infection with COVID-19 is at a median of 4.7 with no difference between nurses and physicians ($p = 0.0749$, median nurses = 5, median physicians = 3). In comparison to the overall population, urologists deem their risk of infection lower, equal, increased, or strongly increased in 1.6, 27.0, 55.6, and 15.8%, respectively (Fig. 2a). The specific anxiety to get infected by COVID-19-positive colleague despite the reciprocal protection by surgical face masks is high in 56.5%, medium

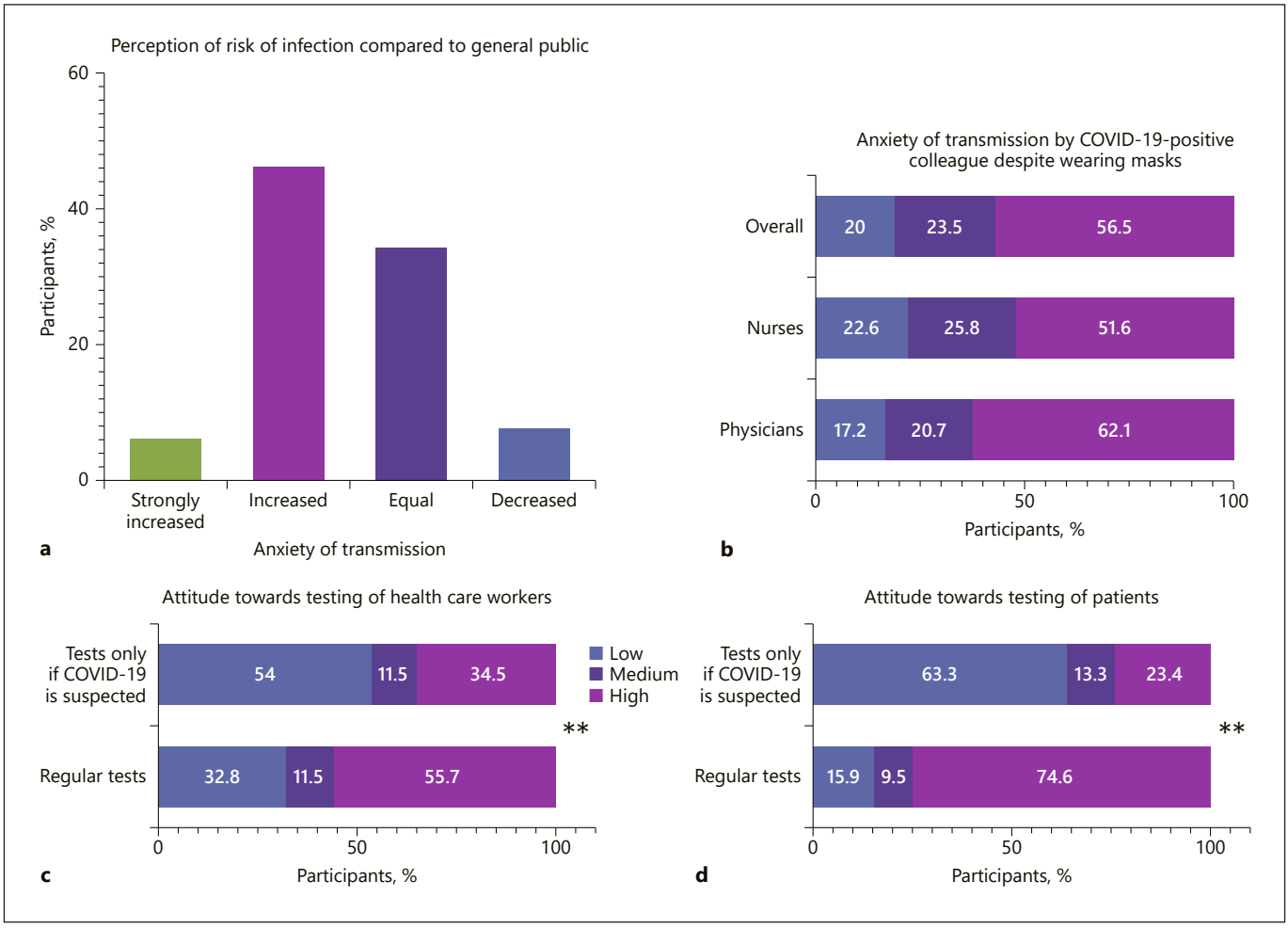

Fig. 2. Anxiety of infection and attitude towards testing of HCWs and patients. **a** Perception of risk of infection compared to the general public. Current perception of anxiety is ranked from 0 (no fear) to 10 (maximum anxiety). **b** Anxiety of transmission by COVID-19-positive colleagues despite wearing masks. HCWs ranked their anxiety of transmission by colleagues tested positive from 0 (low anxiety) to 10 (high anxiety). **c** Attitude towards testing of HCWs. HCWs were asked about their attitude towards regular testing of staff members or only if COVID-19 is suspected, ranked from 0 (disagree) to 10 (totally agree). ** The attitude towards testing of HCWs shows a clear trend towards regular tests not only in case of suspicion of COVID-19 ($p = 0.0001$). **d** Attitude towards testing of patients. HCWs were asked about their attitude towards regular testing of patients or only if COVID-19 is suspected, ranked from 0 (disagree) to 10 (totally agree). ** The attitude towards testing of patients shows a clear trend towards regular tests not only in case of suspicion of COVID-19 ($p = 0.0001$). COVID-19, coronavirus disease 2019; HCWs, health care workers.

in 23.5%, and low in 20% of the respondents (Fig. 2b). The attitude towards testing of staff members and patients depicts a clear trend towards testing of staff members (Fig. 2c) and patients (Fig. 2d) regularly on a weekly basis and not only in case of suspicion of COVID-19 ($p = 0.0001$ and $p = 0.0001$, respectively).

The overall majority (86.9%, 53/61) state that asymptomatic HCWs tested positive for COVID-19 should not work, with only 3 participants not objecting working with positive HCWs (online suppl. Fig. 1; for all online suppl. material, see www.karger.com/doi/10.1159/000512911). Surveyed clinicians rank current safety at a median of 6 out of 10 (online suppl. Fig. 2) and indicate provision of personal protective equipment at a median of 4 (nurses median of 5.5, physicians median of 4, $p = 0.56$) (online suppl. Fig. 3), specifically complaining about missing filtering facepiece masks (FFP2) (23.8%, 15/63) and protective overalls (7.9%, 5/63).

Social exclusion is not a relevant issue for 46.6% of the participants, who do not have the feeling to be avoided by family members or friends, while 34.5% perceive social exclusion due to their work (online suppl. Fig. 4).

The preferred source of information about the pandemic is the internet (82.5%, 52/63), followed by television (60.3%, 38/63) and the employer represented by the hospital's task force (58.7%, 37/63) (online suppl. Fig. 5). In fact, the HCWs show appreciation for information provided by the employer, with a median contentment at 7.27 (± SD 2.57) (online suppl. Fig. 6). Further sources of information are newspapers (44.4%, 28/63), radio (30.2%, 19/63), friends (23.8%, 15/63), scientific web pages (27%, 17/63), and journals (22.2%, 14/63) (online suppl. Fig. 5). Social media categories such as Twitter and Facebook rank low as sources of information – 9.5% (6/63) and 4.8% (3/63), respectively (online suppl. Fig. 5).

Discussion

In order to limit SARS-CoV-2 transmission and severe disease courses in vulnerable people, governments have been restricting social life and economy with different degrees of "lockdown." Educational, social, and working life have been dramatically changed to ensure distancing measures and reduce the wave of infections. However, health care personnel for instance is generally at high risk of infection and transmission of the virus due to close exposure to patients. Therefore, to provide efficient care during the peak of the pandemic, most health care providers make huge efforts to protect medical personnel and patients from infection, despite the acute shortage in protective equipment.

Anxiety of infection and stress levels during the pandemic in HCWs have been studied in the first countries affected by the crisis, showing increased psychological stress in HCWs [7, 8]. Mental exhaustion and strain due to the pandemic have unraveled depression and anxiety symptoms [9], often leading to sleeping disorders [8]. To maintain stable mental health in HCWs during the pandemic, guidelines and coping strategies have been designed and published [10, 11]. Even though not every health care unit is affected equally by the pandemic, a certain anxiety resulting in psychological distress affects every HCW.

While most analyses so far have focused on specialties on the front line of the pandemic, we sought to evaluate the current level of anxiety as well as the physical and psychological burden in the nurses and physicians of one of the largest urology departments in Germany few weeks after the lockdown started. While the academic hospital of Ludwig Maximilian University represents one of the leading institutions in the response to the pandemic in the country, with reallocation of resources into the care of COVID-19 cases, the urology department has pursued its commitment to ensure high-level uro-oncological and urological emergency care. The restriction of surgical slots and limitation to treatment of only acute, severe, and advanced oncological cases has reduced the usual patient flow in the urological department and thus the workload of the personnel. The reduced workload is evident in the statement that the participants are not physically worn out during the crisis, but the psychological burden is higher, despite rare contact with COVID-19 patients in the urology clinic. This may be in part due to the infection risk, as all HCWs deem themselves at a higher risk of infection compared to the general population. In fact, nurses are more prone to feeling psychologically stressed by the acute situation because they are more exposed due to the direct contact with potentially infected patients. However, we believe that the mental stress may also originate from various social factors related to the pandemic, such as financial difficulties or arduous childcare during lockdown of schools.

The most evident anxiety depicted in the HCWs queried in our study is to get infected by a colleague who has contracted SARS-CoV-2. This very tangible fear is probably related to an early widespread outbreak of SARS-CoV-2 infections among the HCWs in the multidisciplinary uro-oncology ward [12]. The event, involving both urology physicians and nurses, has embodied the presence of the pandemic in the department and probably explains the strong sentiments in the survey. In fact, the majority (86.9%) of surveyed HCWs demand that asymptomatic positive personnel be quarantined, according to the current standards, although there have been discussions in the public whether essential HCWs may pursue their work if asymptomatic and adequately protected.

HCWs are undoubtedly at increased risk of SARS-CoV-2 infection: a study from Wuhan showed that up to 41% of HCWs were infected with COVID-19 [13], while a further report from China identified 4.4% of HCWs among 77,262 COVID-19 patients [4].

The risk of HCWs during the crisis is generally recognized and leads to outbursts of gratitude, but also exclusion in the general public, eventually aggravating the mental distress of HCWs. Social exclusion due to their profession is perceived by one-third of nurses and physicians (31.0 and 38.1%, respectively).

Psychological stress and anxiety of HCWs need to be addressed to warrant a functioning health care system, in particular during the crisis. There is an urgent need to establish clear safety standards for exposed and infected

HCWs. In fact, asymptomatic carriers may be able to spread the virus [14, 15] and presymptomatic transmitters are also reported [16, 17], and there is evidence that individuals who have recovered or were tested negative following detection of the virus can also continue to transmit the disease [18]. Therefore, identification of a potential threat is claimed by testing HCWs (55.6%) and patients (74.6%) for SARS-CoV-2 on a regular basis, not only if COVID-19 is suspected.

Population-wide testing is regarded as an exit strategy from social lockdown in the opinion of some experts [19], but the putative threat by nosocomial transmission of the virus despite the social lockdown may be underestimated, as assumed by the widespread diffusion of COVID-19 in northern Italy [20]. Regular testing based on PCR obtained typically from the oro- or nasopharynx of patients and hospital personnel for reciprocal protection has been frequently discussed, and the current approach is very heterogenous. In Spain for example testing was initially limited to HCWs with severe symptoms or those with high risk of developing them [21]. Other countries like South Korea favor widespread testing to identify anyone affected by the virus and trace potential contact persons [21], and some deem that general testing may avoid unnecessary quarantines and reduce in-hospital transmission [21].

Nevertheless, at the moment only PCR is offered for the detection of SARS-CoV-2 from nasopharyngeal swabs. Further tests, in particular serologic depiction of the immunological status, are not yet implemented [22, 23], but should be shortly available.

As shown in our study, there is high anxiety to get infected by SARS-CoV-2 among HCWs. To reduce this high anxiety of transmission, better educational programs to inform and teach medical personnel and reduce the uncertainty of its ways of transmission are needed. A cross-sectional study from the United Arab Emirates among HCWs with 529 participants showed that a significant proportion of participants had poor knowledge of the transmission and symptom onset of COVID-19, with a great gap in knowledge between doctors and other HCWs [24].

We believe that there is great uncertainty among medical personnel expressed through the intense fear to get infected by SARS-CoV-2 and potentially act as a vector for their families. This can lead to mental exhaustion, but psychological distress in HCWs may originate from different situations related to the current pandemic. While the whole world is focusing on the reduction of transmission, the psychological well-being of our HCWs, not only of those working on the front line, must not fall behind.

Conclusion

The pandemic itself does not represent a great physical burden to the personnel of a large urological clinic, but the psychological discomfort and the intense anxiety of transmission are a great burden that may interfere with efficient patient care. Warranty of safety precautions, such as adequate protective equipment and regular tests for SARS-CoV-2 for patients and HCWs, as well as psychological support may prevent additional stressors during the pandemic.

Statement of Ethics

All procedures were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The institutional review board (Ethikkommission der Ludwig-Maximilians-Universität München) granted its approval for the study (reference No. 20-388-KB). Informed written consent was obtained from all individual participants included in the study.

Conflict of Interest Statement

All authors declare that they have no conflict of interest.

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Author Contributions

M. Apfelbeck: data collection, data analysis, manuscript writing and editing. M. Staehler: data collection, manuscript editing. S. Rodler: data analysis, manuscript editing. R. Stredele: data collection, manuscript editing. M. Chaloupka: data collection, manuscript editing. J.-N. Mumm: data collection, manuscript editing. A. Buchner: data analysis. C. Stief: project development, manuscript editing. J. Casuscelli: project development, data collection, data analysis, manuscript writing and editing.

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