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Abstract

Background: COVID-19 cases was reported in December 2019 in Wuhan, China, as a pneumonia from an unknown caused. By January 30, 2020, there were already 7,734 positive cases in several provinces of China, and by April 18, the virus was confirmed in 198 countries (Shaukat, Ali and Razzak, 2020), by May 2022, cases were above 3.5 million, and fatalities above 12,000 (World Health Organization, 2022).

Methods: The targeted employees are managers, nurses/ healthcare, and cleaners, which are considered the people that are in longer contact with the patients. I used for the quantitative method a survey, for 6 weeks 52 employees were engaged in it, employees from departments that have been in contact with covid since the beginning of the pandemic until now. As for the interviews, these were done for 2 weeks, where I was able to speak with 4 different people. The manager who runs cleaners in covid areas, 2 cleaners of covid areas, a nurse of covid area.

Results: Practices implemented by the Hospital to ease the process for FHCWs, where most of the participants experienced severe psychological and physical symptoms during 2020 such as anxiety, uncertainty, fatigue, burnout, loneliness, insomnia, nightmares, transpiration, chest pain, panic breakdowns, and gastrointestinal problems. Also, skin problems related to the use of PPE. Symptoms ease as the same time as government measures ease and allowed to engage in their regular routine to decompress.

Limitations: The results only represented a small sample of workers, the availability of participants was a factor because during the data collection, workload was quite heavy.

Conclusions: COVID-19 impacted negatively psychologically and physically to workers during 2020, as for now symptoms are gathered on low levels, mostly related to the current affluence of the Hospital during winter.

List of acronyms used

- ARI: Acute Respiratory Infection
- COVID-19: Coronavirus disease
- FHCW: Frontline Healthcare Worker
- HCW: Healthcare worker
- IPAC: Infection Prevention and Control
- MHCRT: Mental Health Crisis Response Team
- NYC: New York City
- PPE: Personal Protective Equipment
- PTG: Posttraumatic Growth
- PTSD: Posttraumatic Stress Disorder
- SARS: Severe Acute Respiratory Syndrome
- UK: United Kingdom

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Comparison during 2020 and 2022 mental and physical symptoms impacting cleaners, nurses, and managers dealing with COVID-19 areas. What has changed, are the symptoms still there?

INTRODUCTION

Background of research

First cases reported in the middle of December 2019 in Wuhan, China with several patients hospitalized with a diagnosed of pneumonia from an unknown caused. By January 30, 2020, there were already 7,734 positive cases in several provinces of China and other countries were testing positive in the virus. By February 7, 2020, there were 31,161 confirmed cases (Rothan and Byrareddy, 2020), and by April 18, the virus was confirmed in 198 countries with infections of 2.4 million people (Shaukat, Ali and Razzak, 2020). The first week of May 2022, cases were above 3.5 million, and fatalities above 12,000 (World Health Organization, 2022).

Studies related to transmission of COVID-19 in China showed that poor hand hygiene, negligence of hand disinfection before and after contact with patients, erroneous use of PPE, exposure to patients (Min et al., 2020), prolonged contact with patients (Cheng et al., 2020), and insecure exposure were risk factors. Experiencing symptoms such as fever, cough, weakness, chest distress, headache, and diarrhea (Ran et al., 2020).

Around the world, by 2020 the pandemic hit badly to many countries and professionals involve in the health system of each country, had to manage, and resolve quickly arisen

concerns, changing scenarios, misinformation, making difficult decisions and work under extremely rare circumstances.

Rationale for the study

The aim is to add value to the mental and physical impact lived by hospital employees, and to understand what symptoms are still present and why? What has been implemented at the managerial level, best practices adapted to this new reality, and the perspective of cleaners, nurses, and managers. The research is based in Dun Laoghaire, County Dublin, Ireland.

This paper will examine the effects encountered by nurses, managers, and especially cleaners facing COVID-19 areas and patients; psychological consequence, coping with the workload, physical pain during the process, and wearing PPE during the pandemic.

State the research question

Comparison during 2020 and 2022 mental and physical symptoms impacting cleaners, nurses, and managers dealing with COVID-19 areas. What has changed, are the symptoms still there?

Statement of the themes and research objectives

- Past and current practices that boost staff safety, what have we learnt from previous outbreaks, and which programmes have been implemented?
- Repercussions of excessive workload in Frontline Healthcare Workers during COVID-19, Symptoms arose during stress periods and ways to diminish their impact.

- Identification of work-related psychological symptoms and physical deterioration, how to lessen them?
- Manifestations of wearing PPE, Standardized PPE usage, and consequences experienced by workers.

Information gathering and data collection technique used

The research was developed by collecting information of cleaners, nurses, and managers designated to COVID-19 areas at St. Michael's Hospital, Dun Laoghaire. By qualitative research (4 interviews) and quantitative research (52 questionnaires).

Expected outcomes of the study

Since the start of the pandemic, the level of involvement and drastic change in hours worked has resulted in some severe consequences in their personal life. Anxiety, exhaustion, fear, uncertainty, and physical pain are among the symptoms experienced by frontline workers.

I am hoping to reveal the effects felt by frontline workers after 2 years into the pandemic, what was the experience in the response of the management towards their necessity, best practices introduced, and changes in the practical, organizational, and managerial level.

Chapter by chapter overview

In the present study, a comparison of current and past symptoms experienced by Frontline workers against COVID-19, using mix methods, questionnaires and interviews on managers, nurses, and cleaners.

On the literature review, the investigation makes a solid ground from where to start and identified patrons on previous outbreaks and various stress periods.

On the methodology, it is detailed the approach taken by this investigation, either for questionnaires and interviews, how the data was revised and interpreted.

Following, the results section makes the triangulation from the literature review, the information gathered from the primary research and then the interpretation of these two, stating the results.

Later, in the conclusions it is discussed the answer for the main question, the limitations, and suggestions from this study.

LITERATURE REVIEW

Introduction of The Literature Review

Understand the perspective of frontline workers, their level of involvement, workload-related repercussions suffered, what has changed and how to mitigate the symptoms that have arisen. Also, identify physical and psychological signs and how to reduce them. And finally, what are the consequences of wearing Personal Protective Equipment for prolonged shifts.

Past and current practices that boost staff safety, what have we learnt from previous outbreaks, and which programmes have been implemented?

The network of cleaners, nurses, and managers is important because Hospitals tend to be a focal point of new infections and the spread of viruses (Aghaizu et al., 2011) since caring for ill patients. Often staff performing incorrect hand hygiene, and not being able to self-isolate due to lack of staff and the loss of income. It is known that nurses deal with more skin-to-skin touch and longer contact with patients, while doctors undergo more interactions. These reasons increment the encounter, acquirement, and spread of transmissible and respiratory infections. (Jiang et al., 2018). Studies had revealed that transmission of the virus via patient healthcare is less viable due to the use of PPE, however, the transmission of HCW-HCW in areas where they can gather such as offices, rest areas, or canteen is more likely to happen because no protection is worn (Wee et al., 2020).

Previously, practices such as constant staff surveillance, examination, and isolation of possible contagious HCWs proved to diminish outbreaks in hospitals, perhaps this approach is not viable in hospitals with overflowing demand yet controlling during the first phase of outbreaks will reduce the impact. Combined strategies to detect ARI (acute respiratory infection) symptoms, encourage individuals to cooperate on this strategy, to foment application of immediate detection, and then outbreak handling.

Equally, a Canadian study (Yau et al., 2021) indicated that early identification and immediate actions can prevent a further spread. Practices like early testing and use of a mask during all interactions; external support like Infection Prevention and Control IPAC training to all members; education for standards and protocols to reassure staff knowledge and increase morale; leadership culture acting as a role model, education, and training of staff to reduce misinformation and fear; communication breakdown of correct protocols and coordination of all shifts and announcement of current public health guidelines, is known as best practices (Yau et al., 2021).

During COVID-19 A Mental Health Crisis Response Team MHCRT intervention was launched in April 2020 in NYC to assist remotely in emotional crises 24/7 for FHCWs usually related to the death of patients or colleagues. While a Mental Health Liaison program conformed by psychiatrists, psychologists, and social workers were assigned to assist remotely units in direct contact with COVID-19 (Gray et al., 2021). A support service like this one must be encouraged by directives to emphasize the importance of the well-being of employees, stating the confidentiality and support that this service will bring, and recognize the emotional impact of the actual situation. Consequently, a new agreement

with internal and external stakeholders to modify repayment models to staff (Heath, Sommerfield and von Ungern-Sternberg, 2020).

Positively, a high percentage of Frontline Health Care Workers FHCWs reported pandemic-related posttraumatic growth PTG (Feingold et al., 2022), which is a beneficial psychological transformation that occurred after a traumatic situation (Tedeschi and Calhoun, 2004). Transformation such as better awareness of individual strengths (Greenberg et al., 2020), richer social connectedness (Tsai et al., 2015), recognition of new opportunities in one's life, deeper religiosity, and better appreciation of life (Pietrzak, Tsai and Southwick, 2021).

Even when these changes do not eliminate a posttraumatic stress disorder PTSD, it will certainly diminish. Interventions as military organizations had done, using peer support (Albott et al., 2020), buddy programs (Morganstein and Flynn, 2021), and strengths-focused programs to promote community; all to lower burnout and PTSD symptoms and encourage PTG will improve well-being and mental health of FHCWs.

A study in the UK revealed that managers in the health system agree that there is a deficiency of readiness, PPE was unavailability, testing was taking too long, chaos in the application of PPE, insufficient personnel, panic and tension among the staff, difficulty to comply with social responsibility, and trouble to obey safe social distances (Nyashanu, Pfende and Ekpenyong, 2020) because HCWs are the more exposed at the time of the pandemic. The development and implementation of telemedicine can alleviate the chaotic environment of emergency departments as some countries did during the pandemic (Moazzami et al., 2020).

The authors coincided that even small changes implemented now and then in Hospitals management could help HCWs. I agree with the authors that benchmarking military programs that have demonstrated to work on personnel that had been under life-threatening situations, perhaps a similar perspective and implementation can be done to hospitals. Also, benchmarking hospital management from other countries to enhance administration and rationalize the distribution of revenue in Hospitals to ensure the wellness of staff. Nevertheless, there is a gap in the data collected concerning cleaners' perspectives.

The impact of this information in my research is to understand previous experiences of healthcare workers in past epidemics, integrate those measures to ensure best practices in hospitals, and boost programmes to help staff to cope with the situation. Also, there is a gap in the information, most the information collected is taken from the perspective of nurses or doctors, no information about cleaners is available. Information of managers point of view is not abundant. So, from this information I must learn which practices are used in the Hospital where I am making the survey and if those practices have worked. Fill the gap in the analysis of information related to cleaners' experience in this pandemic.

Repercussions of excessive workload in Frontline Healthcare Workers during COVID-19, Symptoms arose during stress periods and ways to diminish their impact.

Previous outbreak studies like the Ebola have reiterated that anxiety and hygiene obsessive behavior occurred (Ji et al., 2017); a Middle East respiratory syndrome coronavirus outbreak in 2012 showed that HCWs felt at risk most of the time, and unsafe in their work environment (Abolfotouh et al., 2017); and prior SARS occurrences (severe acute respiratory syndrome) unveiled that FHCWs experienced emotional disruption, the fear to spread the virus, and infect family members (Mauder et al., 2006), plus uncertainty, accusation, loneliness, and anger (Mauder et al., 2003).

During the first year of the pandemic, several studies took place and considerable mental health symptoms suffered by HCWs like anxiety, depression, burnout, and PTSD (Post-traumatic stress disorder) are associated with the exposure to the COVID-19 crisis (Smallwood et al., 2021), a survey found that establish policies, communication channels and openness with the organization, administrative leadership, training frequency, usage and convenience of PPE, and workload were long-lasting repercussions accredited to job-related roles. Coupled with routine patient visits and concurrence of the virus.

The workload is indeed associated with hopelessness, nervousness, somatization, sleeplessness, and even suicide. Plus, obesity is a consequence of the previous symptoms. Overwhelming is connected to workload pressure becoming burnout, and poor sleep hours create fatigue (Moazzami et al., 2020). Long-lasting effects in HCWs can manifest as emotional concern and affliction related to stressful experiences in the

pandemic; the worry of spreading the virus to family members or colleagues, and fear of being accused of low hygiene standards in the case of getting COVID-19 (Smallwood et al., 2021).

Furthermore, (Shaukat, Ali and Razzak, 2020) determined that female nurses suffered more exhaustion, apprehension, superior stress disorder, depression, and sleeplessness. Anxiety levels in females were 14.04% higher than in males; men exhibited superior distress, anger, and insomnia. Risk influences such as long duty hours, working in high-risk areas, shortage of PPE, and improper hand hygiene generated more frustration among FHCWs. Moreover, (Zhou et al., 2020) coincided that HCWs are subject to emotional distress in their jobs and symptoms emerge more severe for them than for the general population.

According to (Zhang et al., 2021) nurses preferred to work a maximum of 6 to 8 hours per shift, instead of 12 hours due to the job severity, their physical and emotional safety, the conditions involved, PPE usage, and discomfort, and individual safety needs.

Finally, FHCWs implement tactics to diminish the severity of the experience like the positive appraisal style and social support which are linked directly with beneficial results towards resilience and coping methods (Ye et al., 2020) to reduce the impact of mental health problems in the long run (Veer et al., 2021). Describe as people's ability to return rapidly to a good attitude after something terrible happened (Cambridge, 2022).

Authors agree and complement each other's interpretations of what had happened through the years, from the last 20 years there should be a better implementation of accurate strategies to deal with the burden experienced by HCWs during a crisis, basic

needs such as going to the toilet, having a meal, and sitting down were difficult to handle. Additionally, soreness, dehydration, headaches, and fatigue are symptoms often suffered after 6 hours of work (Zhang et al., 2021). The implication of this information to my research is to identify why specific actions to relief the burden from hospital workers has not been successfully implemented for the long run and the general wellbeing of the personnel. Why some measures were only implemented during the chaos and remove even when it was proven to work. Here is necessary the testimony of cleaners and nurses, and the point of view of managers to discover which best practices have been implemented since the pandemic started.

Identification of work-related psychological symptoms and physical deterioration, how to lessen them?

Facing abnormal stress levels during the pandemic can take people to the edges of their control, this occurred with some HCWs that took their lives in NYC (Board, 2020). HCWs expressed being overwhelmed, unmotivated, fatigued, burnout, exhausted, anxious, sleepy, lonely, and angry during the pandemic (Lewis et al., 2021).

Similarly, a Spanish study (Romero et al., 2020) indicated that higher stress levels could be noticed in HCWs facing COVID-19 patients, uncertainty, misinformation, and crowded units will trigger tension among personnel. Approaches such as breathing exercises, relaxation meetings, mindfulness, and online support will mitigate distress reasonably (Xiao, 2020).

Likewise, American research said that spreading the virus to family members, isolation from family, the uncertainty of the situation, lack of PPE, tests, and poor accurate guidelines were warning signs of HCWs. As well as stress, depression, anxiety, sleeping problems, and loneliness (Shechter et al., 2020). Correspondingly, the lack of familiar interaction initiated social media support for FHCWs. Teamwork played a fundamental role to mitigate stress and burnout, resulting in improving well-being. A sequela of stress was having trouble falling asleep due to the insufficient time to mentally decompress despite their fatigue (Norful et al., 2021).

Deliberate requests from HCWs such as “*hear me, protect me, prepare me, support me, and care for me*” (Shanafelt, Ripp and Trockel, 2020, pg 2134) mirror the results of Australian research where preparedness and protection of mental health was the highest desire from employees to management, transparent communication to lessen anxiety, nurture resilience, and be strong to encounter another crisis. They asked for practical and psychological support (Digby et al., 2020).

HCWs stated frustration with not being able to engage in their self-care activities to handle work pressure; readjust their mindset to defeat the uncontrolled situation. Struggling socially, financially, existentially, and emotionally affected their ability to take care of themselves. (Lewis et al., 2021). As it is known relaxation techniques and eating healthy are used to effectively address workload and keep life balance (Hossain and Clatty, 2020).

Likewise, exercise, religion, yoga, meditation, and group support are coping behaviors HCWs also use (Shechter et al., 2020). Self-care such as adequate sleeping hours,

physical activity, strong professional and personal relationships, and self-awareness are strategies to increase resilience (Heath, Sommerfield and von Ungern-Sternberg, 2020)

At the same time, FHCWs were having physical effects because of the work pressure. An Italian study reported a change in food habits, trouble to sleep, muscle tightness, overreaction, nightmares, panicky breakdowns, perspiration, chest pain, vertigo, and gastrointestinal problems as common indicators experienced by FHCWs (Barello, Palamenghi and Graffigna, 2020).

Symptomatic reactions from the pandemic should be addressed before they become something worse. Sleeping problems can end up causing overweight, diabetes, heart attacks, or strokes (Grandner et al., 2011) while appropriate sleep is believed to boost energy, help body functions, alleviate tiredness, and balance mental well-being. Creating habits to schedule unstop rest and recovery for another working day is vital to handle work pressure. Reading, exercising, and meditation are suitable interventions to secure personal well-being (Pappa, Sakkas and Sakka, 2021).

Though a Chinese study showed that severe insomnia and weight loss are directly correlated to intense PTSD and apprehension in FHCWs (Li et al., 2021). Other Asian study corroborated that headache, throat pain, and lethargy were common symptoms sum to the previous ones (Chew et al., 2020). A study links headaches with the prolonged usage of PPE during the outbreak (Ong et al., 2020).

Finally, (Chutiyami et al., 2022) tangible effects of prolonged use of PPE were the skin damage (Lan et al., 2020) frequently in the nasal bridge, hands, cheek, and forehead,

with evidence of dryness, dehydration, and desquamation, and skin harm (Gross, Mohren and Erren, 2021) to the friction of the mask/gloves.

Authors corroborate their material and complement their research, so in this case the information gathered in relation with psychological symptoms confirm agreement through research during different periods of time. This information becomes valuable because can create a comparison of what symptoms arose during the first year into the pandemic and what psychological and physical symptoms are still visible in people working in these areas. The impact for my research is to be able to gather information about psychological and physical symptoms suffered not only by nurses, but also by cleaners and managers, who were deeply involved and facing patients daily as well.

Manifestations of wearing PPE, Standardized PPE usage, and consequences experienced by workers.

Since the incorporation of PPE in the workplace to safeguard employees, poor-fitting has been an issue. Even when PPE has progressed and carried a wider selection of sizes (Flynn, Keller and DeLaney, 2017), employees still consider the necessity to adjust their PPE to their purpose. While fit can be broadly defined, it is determined by every user if it suits the purpose or not. There is a big difference between suitable PPE and the comfort of using PPE.

Studies have shown that women are needy in proper sizing of PPE wearing, and a tendency to modify it is required (Topping, 2020). Women healthcare workers represent nearly 77% of the workforce and using unsuitable PPE can cause a higher risk to get infected at the time of doffing (Kleinman, 2020). Doffing PPE is the riskiest point of wearing it, is when transmission from the equipment can go to the clothes (Zellmer, Van Hoof and Safdar, 2015). A new study uncovered that shape related to sex differences in the human structure and tolerability problems of prolonged use of PPE are the main discomforts of HCWs (Janson, Clift and Dhokia, 2022).

The production, shape, dimension, and form of PPE have been focused on the human structure of white males and this standardization has carried out difficulties for women in the use of PPE (TUC, 2017); a record created in the military system in the 1950-1960s is still in practice to produce medical equipment (Zhuang and Bradtmiller, 2005). The human composition differs from continent to continent, especially head design should change to adjust to each ethnic group (Lee et al., 2018).

Due to size and shape available of PPE, skin-reported problems arose amongst FHCWs mostly because of masks, gowns, and gloves. Gloves generate dryness and itchiness, while masks produce a problem in the nasal bridge, behind and around the ear, and gowns create sweat and humidity (Gürlek Kısacık and Özyürek, 2022).

Consequently, to that a study (Ong et al., 2020) revealed that 82% of 158 participants experience PPE-connected headaches from masks and eyewear, and 70% did not require medication because the headaches were moderate. However, they observe a reduction in their work performance.

Another study (Xia et al., 2020) presented that dizziness, chest distress, nausea or vomiting, high desire to urinate, extreme thirst, inconvenience at work to collect blood samples, punctures, and auscultatory tests were regular annoyances of using more than 4 hours the PPE. Also, extra effort or time taking to donning and doffing PPE by asking a colleague to help to remove it safely.

As a general concerned of workers, either cleaners, nurses, or managers, the discomfort comes from the same thing, size, and shape. The information reveals a gap in the market that is to adjust the market demand to every region, and as well authors enrich knowledge with new and accurate data from distinct regions. A gap in the information in relation to the point of view of cleaners and managers. The importance of this information is to reveal what workers have experience and which PPE has been more adequate for the current use in the Hospital of where the primary research is done. I agree that HCWs should be trained in how to prevent hospital-acquired infections, so actions could be taken to avoid a further spread or mitigate it. Also, pads to minimize pressure sores in the nasal bridge and cheeks due to mask use, and hand cream (Xia et al., 2020).

Summary of the Literature Review

Health systems are not prepared to deal with situations as big as this. Coordination, preparedness, and understanding of the capabilities of hospitals and availability of staff to encounter situations such as this. Psychological anguish of anticipation and perceived risks by HCWs, emphasize the vital importance of crisis preparedness, organizational

leadership, good management, up-to-date policies, and practices, engage in preventing and dealing with psychological prosperity (Smallwood et al., 2021).

The role of caring for patients requests strategies to relieve the burden of HCWs, correct practices of infection control, and higher rotation in departments to prevent and support mental health issues (Shaukat, Ali and Razzak, 2020). Similarly, studies have shown that continuous contact with family, friends, colleagues and loved one's augments resilience in HCWs (Ortiz-Calvo et al., 2021)

All things considered, containing infectious diseases among HCWs will help to prevent a further spread, as well as monitoring staff symptoms. Organizational practices and benefits to effectively manage crisis where workers are constantly under stress, benefits like child-care, food, and parking space. Also, practices to cut infection and improve family safety, realistic and up-to-date training, enhance connections among staff, and education to respond to adverse events. Managerial practices such as effective communication boost trust and cooperation with staff. Also, grief leadership (Morganstein and Flynn, 2021) arranges memorials or symbolic acts to honor losses and help staff to view positively to the future.

Methodology

Philosophy employed

To understand the impact faced by FHCWs at St. Michael's Hospital, Dun Laoghaire, Dublin, Ireland. To do so, for the primary research I used mix methods data collection, by using surveys in Covid areas, I was able to corroborate the information previously gathered in the secondary research. And finally, by conducting interviews, I was able to understand their perspectives in the subject of study.

Justification for the adoption of the method

The research used a constructivism approach, which is “*a theory that learning is an active process and that people gain knowledge and understanding through the combination of experiences and ideas*” (Cambridge Dictionary, 2022). In other words, is adding value to our reality by the involvement in new circumstances, opening our judgement and unveiling other situations by using the tools of surveys and interviews. Using a deductive approach at the time of conducting the 52 surveys, where the information gathered from the secondary data was tested. While in the information gathering from the interviews an inductive approach was taken to build a richer perspective from the literature used that is already in existence.

Sampling technique and sample size.

To acquire information from most of the staff in the Hospital, I used for the quantitative method a survey, which was open to the public the 15 of August 2022, until the 25 of September. The survey was tested for 6 days where 2 persons engaged and provided

feedback on it, suggesting an easier written vocabulary for the reader, and proposing a more detail information under several sections of the survey. During the 6 weeks of the survey, 52 employees were engaged in it, employees from departments that have been in contact with covid since the beginning of the pandemic until now. The targeted employees are managers, nurses/ healthcare, and cleaners, which are considered the people that are in longer contact with the patients.

The survey is divided into 6 sections:

Sections	Characteristics	Questions per section
1	Consent form	
2	Details of participants	3
3	Theme 1	7
4	Theme 2	3
5	Theme 3	10
6	Theme 4	3

As for the interviews, these were done for 2 weeks, where I was able to speak with 4 different people. The manager who runs cleaners in covid areas, 2 cleaners of covid areas, a nurse of covid area. The structure of the interview covers the 4 sections of the study, previously described. Using 14 questions, the participants can give their perspective on the way the pandemic was managed in the hospital, practices that have worked, and practices that need to be improved. Psychological and physical symptoms arose from the encounter with a massive workload over a year, and finally the consequences of using PPE for so long.

Analysis method employed (relevant for qualitative)

4 interviews were done face-to-face, so all interviews were voice-recorded, and the transcription was sent to the individual interviewee to agree with the final information, before used in this paper. To remain anonymous, the participants have been classified under the following codes.

CODE	POSITION	EXPERIENCE
M.1	Manager of cleaners in COVID area	More than 2 years
C.1	Cleaner in COVID area	More than 2 years
C.2	Cleaner in COVID area	More than 2 years
N.1	Nurse in COVID area	More than 2 years

Relevant information was collected from the insight of people's perspectives and experiences of their encounter with covid. Nvivo themes were revealed during the meetings. All participants were very descriptive and include details of the protocols, measures, and procedures they are engaged. The following thematic tables illustrate the relevant information gathered per interviewee.

M.1	
THEMES	KEY WORDS
Past and current practices that boost staff safety, what have we learnt from previous outbreaks, and which programmes have been implemented?	At first the use of Ebola protocols, later the covid. Reduce the people in contact with covid. New information received daily from the Hospital, new procedures. Training was individual because of infection measures. Inclusion, kindness, tolerance, sympathy. Keep one area for covid, only. Maintain the same staff in the area, no rotative. Exclusive areas for eating , and changing room. Only one manager per area. Control staff movement, contact of 15 min with patients. The cleaner doing all in the room.
Repercussions of excessive workload in Frontline Healthcare Workers during COVID-19, Symptoms arose during stress periods and ways to diminish their impact.	Leave the job for the cleaner, to cover the duties of the absent staff. Heavy workload, provide with food, paid breaks. Workers scared of the new virus, but team support relief the stress and they were no longer scared.
Identification of work-related psychological symptoms and physical deterioration, how to lessen them?	Reading, playing videogames. Just tired from all the physical job, eat and rest. Exhausted and fatigue due to longer hours of work.
Manifestations of wearing PPE, Standardized PPE usage, and consequences experienced by workers.	Itching cheeks, reaction to the mask

C.1	
THEMES	KEY WORDS
Past and current practices that boost staff safety, what have we learnt from previous outbreaks, and which programmes have been implemented?	Infection control training, PPE training, Personal training with supervisor. Practices/ work left to cleaners. Areas totally disinfected, throw away everything. Only one person in contact. Areas divided into positive and query covid. Information well distributed with the staff, on a daily basis. Records of close contact with patients. 15 minutes contact, details of the perssonel.
Repercussions of excessive workload in Frontline Healthcare Workers during COVID-19, Symptoms arose during stress periods and ways to diminish their impact.	Exhausted, dehydration, physical pain, tiredness. Long shifts, heavy burden. Rest to cover, sleep as much as possible. Lack of staff to work in covid areas.
Identification of work-related psychological symptoms and physical deterioration, how to lessen them?	Depress, sentimental, see people dying, watching patients suffer. Tired, physical pain in extremities.
Manifestations of wearing PPE, Standardized PPE usage, and consequences experienced by workers.	Dry hands, bruise on face due to mask usage. Difficulty to breath. Sweatiness, dehydration, marks on face. Headaches.
Nvivo	Getting the same payment. People didn't want to help because they receive the help from the government. People avoid covid areas, until there was only covid to work. Hospital perssonel got cold feet in covid areas, the job was left to only a few. People keep getting the same salary.

An Nvivo theme was collected from the 1st cleaner. It was mentioned the salary level at that moment, the Government payment playing an important role of why people were reluctant to work, and how some internal personnel were backing out from helping in the treatment of covid patients, therefore the workload was heavier.

C.2	
THEMES	KEY WORDS
Past and current practices that boost staff safety, what have we learnt from previous outbreaks, and which programmes have been implemented?	Usage of PPE, clean and disinfection protocol, disposal of contaminated waste, the use of chemicals to disinfect. 15 minutes contact with covid. Use of masks. Personal training given by supervisor and manager. Information up to date, Superiors acting as role models. Wash you hands training. Gifts to the personnel. Food provided by restaurants and supermakets to FHCW.
Repercussions of excessive workload in Frontline Healthcare Workers during COVID-19, Symptoms arose during stress periods and ways to diminish their impact.	Long shifts. Insomnia, frustation, anger. Diminish by people doing their jobs, contributing in the duties.
Identification of work-related psychological symptoms and physical deterioration, how to lessen them?	Anxiety, insomnia, frustation. Walking and animal company.
Manifestations of wearing PPE, Standardized PPE usage, and consequences experienced by workers.	Allergic reaction to masks, sweatiness of PPE. Red skin.
Nvivo	Porters desist from their duties, in covid areas. Problems with drug and alcoholic addicts; no empathy from people towards FHCW. Regulation of patients actions. Moral trainings needed.

An Nvivo theme was collected from the 2nd cleaner. Which mentioned Porters desist from their duties, hence this workload was put into the cleaners, and how the Hospital needs a psychologist, and finally that ethical training is required for the personnel of the Hospital, to help as well with the regulation and control of patients' activities.

N.1	
THEMES	KEY WORDS
Past and current practices that boost staff safety, what have we learnt from previous outbreaks, and which programmes have been implemented?	Description of patients health, restricted contact with patients positives in covid, team work with patients with covid. Full stock of PPE and necessary equipment to use. 15 minute contact. Phones to communicate with patients. Cameras to supervise covid positive patients.
Repercussions of excessive workload in Frontline Healthcare Workers during COVID-19, Symptoms arose during stress periods and ways to diminish their impact.	Now, Division of shift, give equal hours to everyone. Reduce the burden in staff.
Identification of work-related psychological symptoms and physical deterioration, how to lessen them?	Depression or sadness to see patients getting worse or die. Emotional burden. Physical tiredness of doing physical work with patients.
Manifestations of wearing PPE, Standardized PPE usage, and consequences experienced by workers.	Tired, dehydrated, difficulty to breath. Marks because the use of PPE. Sweat.

Ethical section

The consent form for the survey and interview is where participants got a full explanation of why they were chosen for the study, that they could withdraw at any time, the anonymity of their participation that no personal information was collected or needed at any point, that their involvement was fully voluntary, that their responses were confidential and were only disclosed for the results of this study, what is the purpose of gathering this information; and the information of the researcher (student), degree of study, the College of enrolment, and to whom they may contact in the case of having further doubts.

Every participant had to signed and agreed to how the information was going to be used either for the interview or survey. An explanation of how long the information was going

to be retained, and that some phrases and numeric results would be used in the dissertation paper.

Interviewees received a transcription of their interview to agree with the final information, before used in this paper.

Results /findings

Four persons were interviewed: 2 cleaners, one manager, and one nurse. The information will be described as per theme, according to the information provided. There were Nvivo themes revealed which will be described at the end.

The total of respondents for the survey were 52 people, all percentages shown in the results were calculated from this number, from which the characteristics were as follows: 36.5% were males and 63.5% were females. The age range varied from 20 to 60 years old, resulting in 86.54% from 20-50 years. Finally, their professional position; 65.4% nurse/healthcare, 23.1% cleaners, and 11.5% were managers.

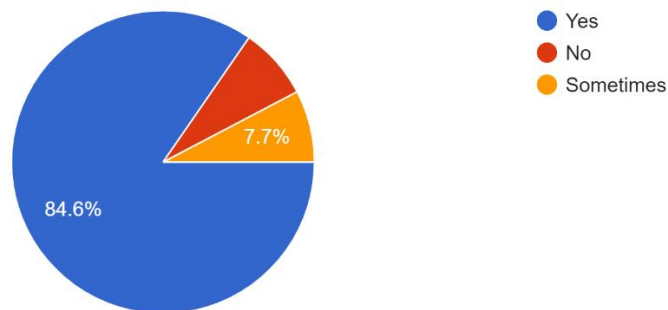
Theme N.1 Practices that boost safety

From this theme the most relevant information obtained are that 78.9% recognized having 2-5 trainings during the pandemic on infection control standards, as revealed by interviewee *"After, like we had the training, with the infection control, they basically explained to us what it's like covid about, how we have to put the PPE and which chemical we have to use for it, and how that was spread. And then with our supervisor, he helped me, I went with him, like to clean two rooms, so he showed me"* (C.1, 2022).

Related to the protocol measures already communicate by the HSE (Health Service Executive, 2022), such as exposure to the virus, movement across buildings, staff clothing, patient placement, transfers, etc. 73% revealed having more than 2 trainings during the pandemic. Here, interviewee revealed *"The first time, we received the same PPE and the protocols for the Ebola, after two weeks, this changed again and was more specific for the COVID"* (M.1, 2022), other interviewee described *"Normally when the patient was called covid positive we used to have one nurse outside just like, if we would need something because we cannot go out of the room, get everything ready um washed them, obviously like going inside the room with the PPE, take no more than like 15 minutes; disinfect everything, then change all the time the sheets and put them in an infection bag, with patients just try to be as quick as we can but also effective. We have phones inside the room, in case they need something, so we don't have to go inside. We have the cameras as well, with patients that need like full assistance, so, we don't have to be going inside every time for checking them."* (N.1, 2022).

Now, related to performance of the Hospital during the pandemic 69.2% considered practices work accurately; just as (Digby et al., 2020) employees asked for preparedness on practical procedures to protect them, and 25% expressed new practices could be implemented *“I can say that the procedures were working, not as 100% efficiently, but I guess there's always room to improve”* (N.1, 2022).

Likewise, 84.6% indicated their managers act as role models and support their staff.

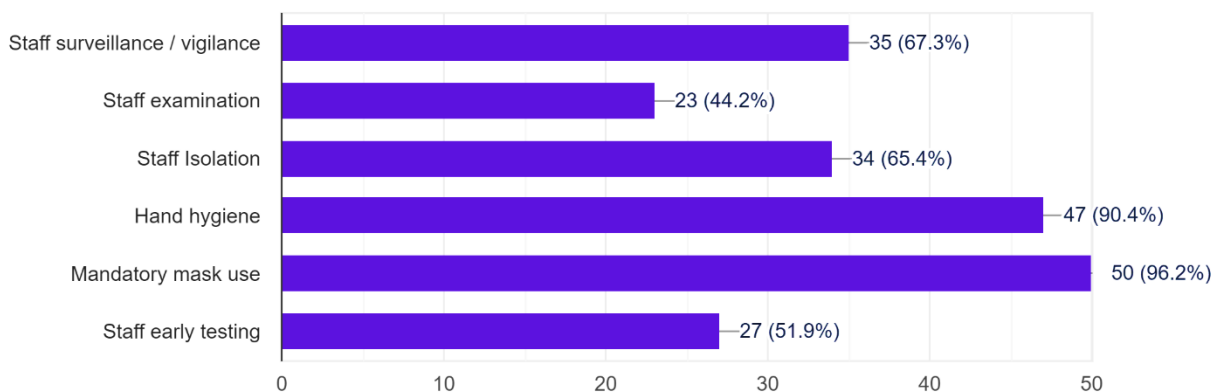


From the communication structure 78.8% expressed their department spreads the information to all staff, here interviewees revealed *“Yes, every day. Every day we received new information from e-mail or infection control gave the information, when the manager evaluated this and showed me, we explained to the team individually, because we can't take all team and put in the same room, for the protocol”* (M.1, 2022), and 48.1% said all staff can get the announcements. While a 3.8% considers there is a lack of communication among the department.

As for the measures taken by the Hospital to control outbreaks and spread of viruses, not only COVID, but any virus, the numbers have shown that the Hospital puts in action several good practices (Yau et al., 2021) to maintain staff and patients' safety as one of

their key elements; as interviewees insights demonstrates *“For me the best practice and positive for the hospital is to put one area for isolation. Another good practice was when they decide to leave the same staff just for the same area, is not rotative around at the hospital, they fitted out the small canteen, the changing room, and this is a good practice. OK. After one year, the hospital takes the decision, yes, it's one manager OK per section, and this is good because it's only one person taking decisions, is easy for us and for the rest of the team.”* (M.1, 2022). Also, *“other thing is controlling the people go inside and outside the room, other protocol is not to stay inside the room more than 15 minutes to reduce the impact inside the room, just enter the cleaner because you safe PPE, you safe time and staff, one person is better”* (M.1, 2022). This information contributes to (Wee et al., 2020) where integrated strategies to control outbreaks reduces impact of spread (Yau et al., 2021) and increase staff morale due to the constant feedback and vigilance. Interviewees agree on how the protocols were implemented and individual training was helpful *“I remembered like I had to go with the supervisor and cleaned 1 or 2 rooms with him, so he showed me how to do it properly”* (C.1, 2022)

52 responses

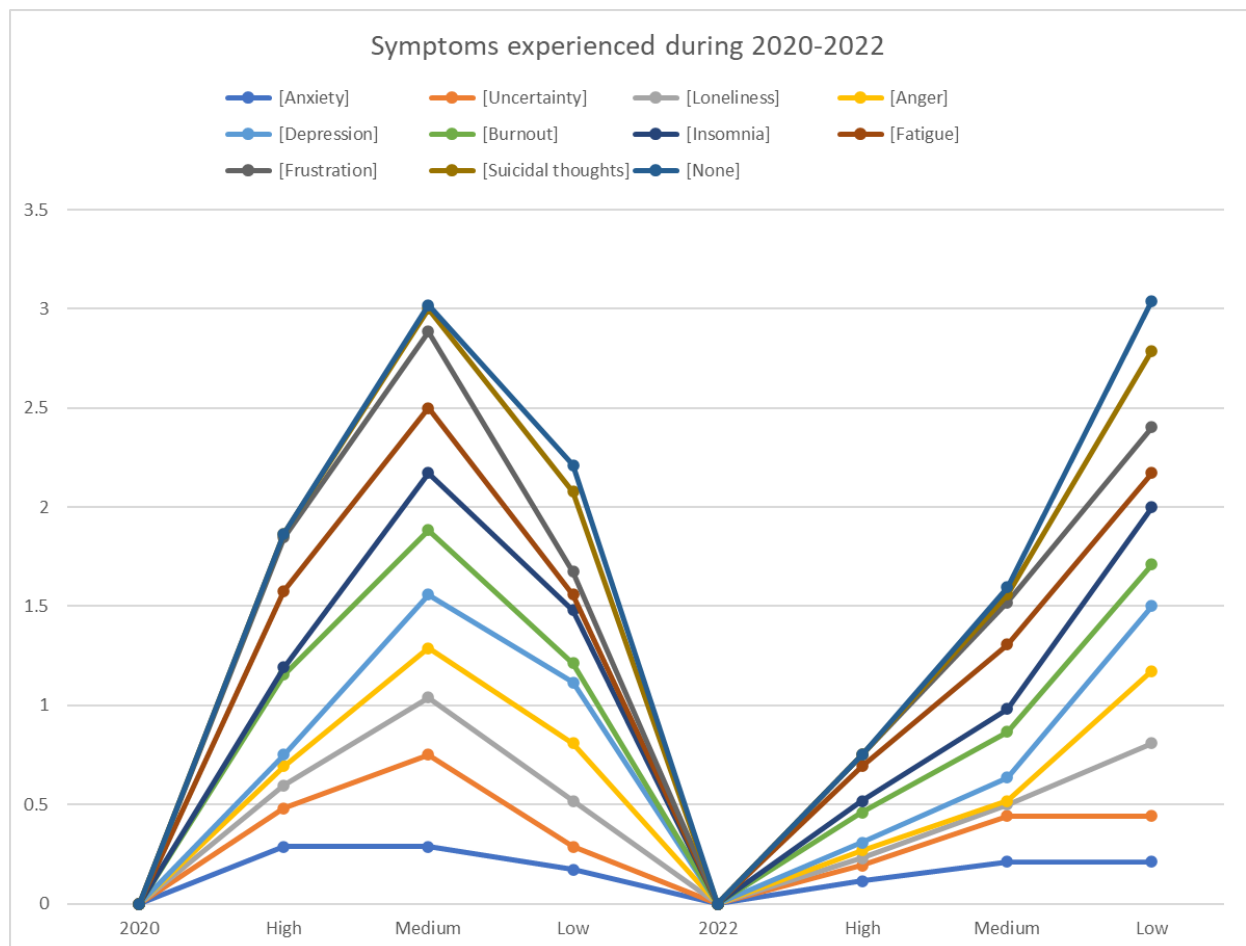


Equally, as mentioned on (Feingold et al., 2022), results of PTG were 61.5% expressed more appreciation of life, 55.8% said higher personal strength (Greenberg et al., 2020), 42.3% declared they have better relations with people, as interviewees expressed *“it’s a positive transformation, it’s not just in me it’s all, include all the hospital, all staff included, now people is kind, is more friendly, and include us inside the team of the hospital, yeah”* (M.1, 2022). This information corroborates secondary research (Tsai et al., 2015), then 32.7% said they had spiritual growth, and 30.8% revealed awareness of new possibilities in life (Pietrzak, Tsai and Southwick, 2021). While 21.2% did not experience a change at all.

Primary and secondary research coincided and add new data of the practices, implementation taken, and the communication that St. Michael’s Hospital uses, surveys and interviewees agree with the information from previous research, contributing with their responses to more relevant data. While the majority expressed conformity with the institution, broadly speaking the situation is working but it can become more efficiently, not all communication channels are widely open, there is room for improvement in all departments, practices, and procedures, and even some workers mentioned dissatisfaction in how the Hospital runs.

Theme N.2 Symptoms arose during stress periods

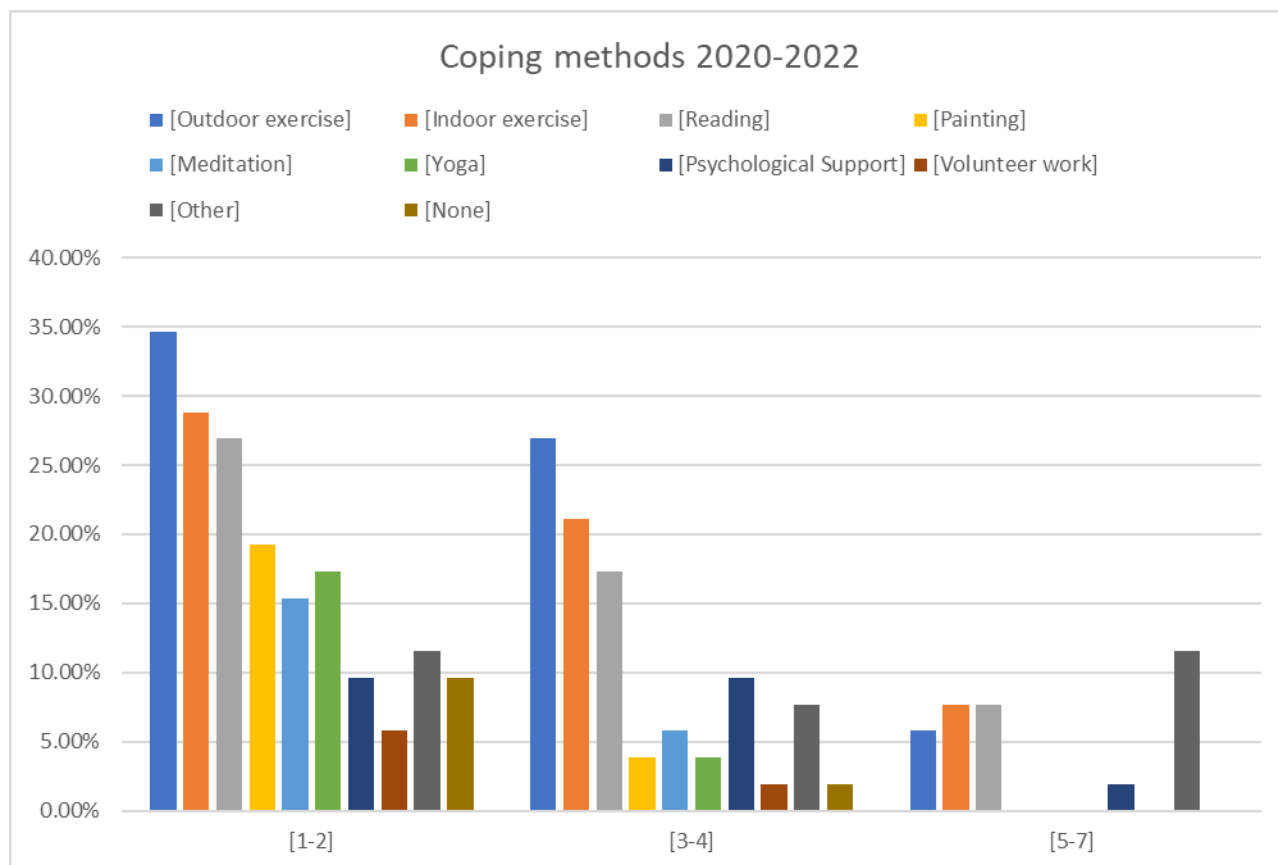
This section has 3 questions where the main goal is to collect information about the symptoms experienced at the beginning of the pandemic, the level of severity, and compare them with ones that are still present, and understand the coping methods used by the participants.



During 2020 the most common symptoms were 40.4% burnout as interviewee reported “*I used to finish exhausted! Because it was like pretty heavy, it was like going inside, to*

clean the walls was like the worst part because I used to have like pain. And you had my hand, my arms; I used to finish like my arms, I used to finish like so tired!" (C.1, 2022), and 38.5% fatigue in high level, as interviewee also expressed *"So, I used to like get home and just like, eat something and then fall asleep until the next day, and then start again."* (C.1, 2022); 46.2% stated uncertainty and 38.5% frustration in medium level, as an interviewee revealed *"a little bit frustrating, because all the measures to close the pubs, to close the church, close the gym. I thought, "you don't need to do" yes is a new illness, oh my God is a pandemic! but I think it was very extreme, and that cause me a little bit of frustration and anxiety"* (C.2, 2022); and 40.4% on suicidal thoughts; these experiences are like the ones occurred during SARS (Maunder et al., 2006).

As for 2022, 32.7% fatigue in medium level mirrors that overwhelming is linked to workload pressure turning to burnout, resulting in poor sleep hours subsequently on fatigue (Moazzami et al., 2020), while the rest of the symptoms were under the lower range, such as 38.5% suicidal thoughts, 36.5% loneliness, and 36.5% anger (Maunder et al., 2003). Overall, during 2020 symptoms were cluster on medium, low, and then high, while in 2022 the shift is towards low, medium and some on high.

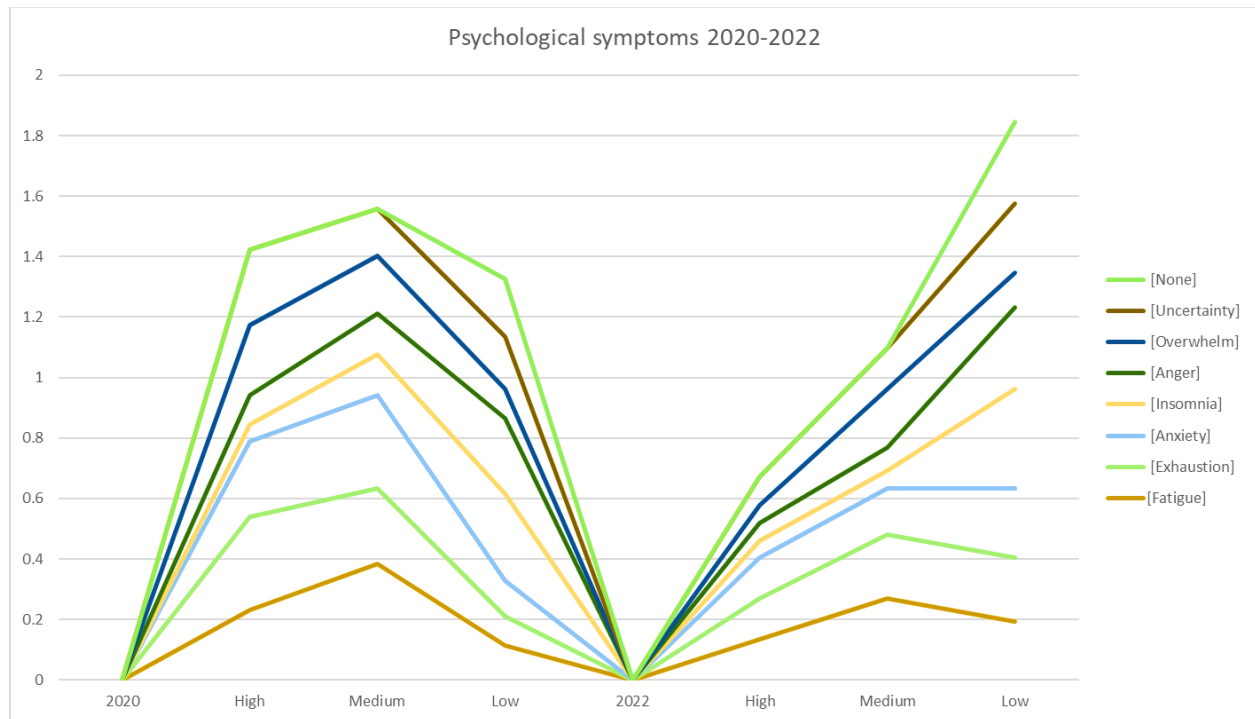


Coping methods used by workers to lessen the influence of mental health issues in the long term (Veer et al., 2021) here are 34.62% “1-2 days” and 26.92% “3-4 days” of outdoor exercise, 28.85% indoor exercise, and 26.92% of reading. These 3 activities were the most common, equally interviewee experience was *“I was working in another job, as a housekeeper and dog sitter and really the dog is very medicinal and walking.”* (C.2, 2022). Similarly, on (Shechter et al., 2020) exercise, religion, yoga, meditation, and group support are coping behaviors HCWs also used, as expressed by interviewee *“In the first time, the impact was negative because the staff is normally, so scared because it's a big area, it's a new virus, but during the pandemic we were together, it's me, and you, and*

another cleaner and the cleaner said “ah, is no bad, it's another illness; it's not too bad” and the stress and scared reduced too much. Yeah, it's a nice work, it's the same as another virus, just take the protection for yourself.” (M.1, 2022).

Overall, symptoms have been settled down with time and by the used of coping techniques, some symptoms as fatigue, loneliness, anger, burnout, and insomnia are now moderate and the level of severity now relates to the workload that FHCWs are currently having, but alarmingly depression and suicidal thoughts keep a solid path in FHCW, for this further support is needed. In general, primary, and secondary research complement each other, providing with this research current information. In relation to supporting programmes for the staff, the Hospital has none, that is why this is the opportunity to implement them, as it is expressed on the Nvivo theme, a psychologist will be very helpful. During traumatic periods is important to keep an eye on people who are under severe pressure to perform successfully because it can cause the contrary effect and pushed them to their limit. That is why is critical to provide them with the necessary help and support through this time.

Theme N.-3 Psychological and physical symptoms experienced

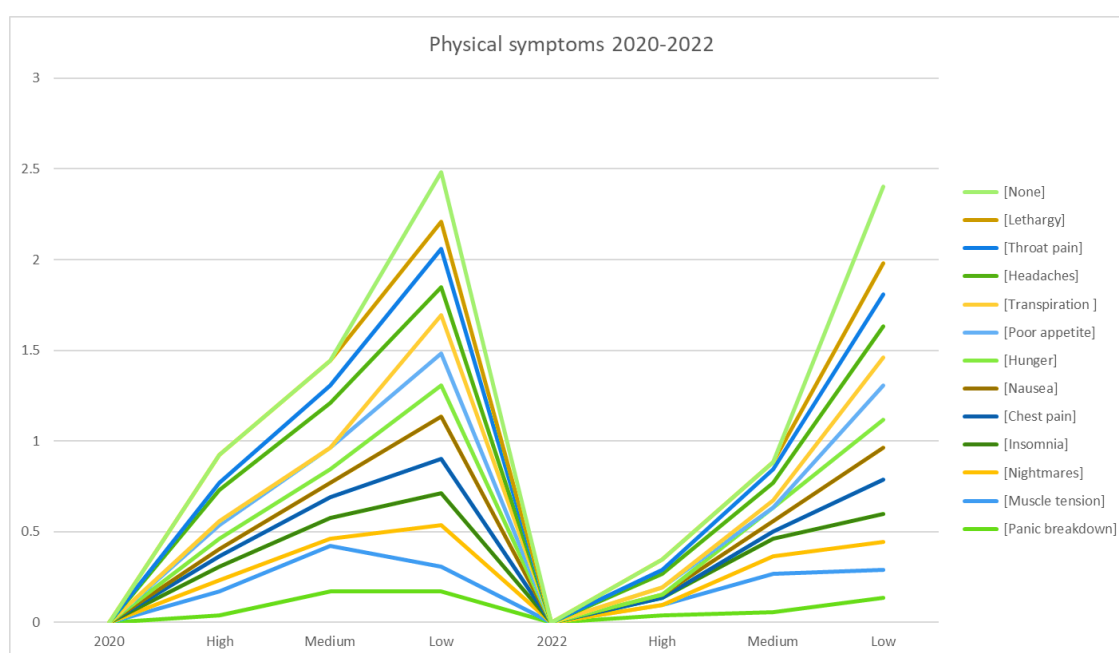


Comparing the responses in 2020, fatigue, exhaustion (Shechter et al., 2020), anxiety, insomnia, and anger were the higher values, cluster most of them in high and medium severity, just as interviewees expressed *“I had anxiety crisis and I started sleeping very bad, no more than 2 or 3 hours and then I’m ready”* (C.2, 2022); these results couple the already expressed on a study (Lewis et al., 2021). While in 2022, symptoms are gathering in the lower levels, and the highest rate is insomnia, then fatigue (Chew et al., 2020) and anger, and at the same time much of respondents declared no symptoms anymore.

Moreover, interviewees revealed from their daily experiences *“I was depressed, not just for me because I was like near to the people who were like suffering, you know. Yes, and I used to see people like going from like to be fine or normal, like getting like even worse and then died”* (C.1, 2022). *“Psychological? I cannot say. I can say that it’s like more*

emotionally, like with patients because as a care, we are like close to them, if they die, I can feel that emotionally depression or sadness” (N.1, 2022).

As coping methods during 2020 are eating healthy, cooking, relaxation practices, faith/religion coincided with approaches to distress (Xiao, 2020), and reading in 2022. As expressed by interviewee *“with hobbies, reading, playing PlayStation, and different activities” (M.1, 2022).*



Subsequent, physical symptoms on higher levels during 2020 were headaches, chest pain, nausea, panic breakdowns and muscle tension, as interviewee said, *“just tired because we work all the time, if you stay here for 14 hours per day, yeah you get exhausted and fatigue” (M.1, 2022).* While in 2022 levels of physical severity were elevated in lower level such as, throat pain, lethargy (Chew et al., 2020), poor appetite, and chest pain; as expressed *“I mean the physical thing, I think obviously you are working*

there, you are helping them, you are doing the activity, so you get like tired. Yeah, tired and dehydrated" (N.1, 2022).

To diminish the symptoms people did in 2020 exercise, took painkillers, and relied on their faith/religion. As for 2022, a high number did nothing *"you just solve it with food and sleep"* (M.1, 2022), others relied on psychological help, medical help, and meditation.

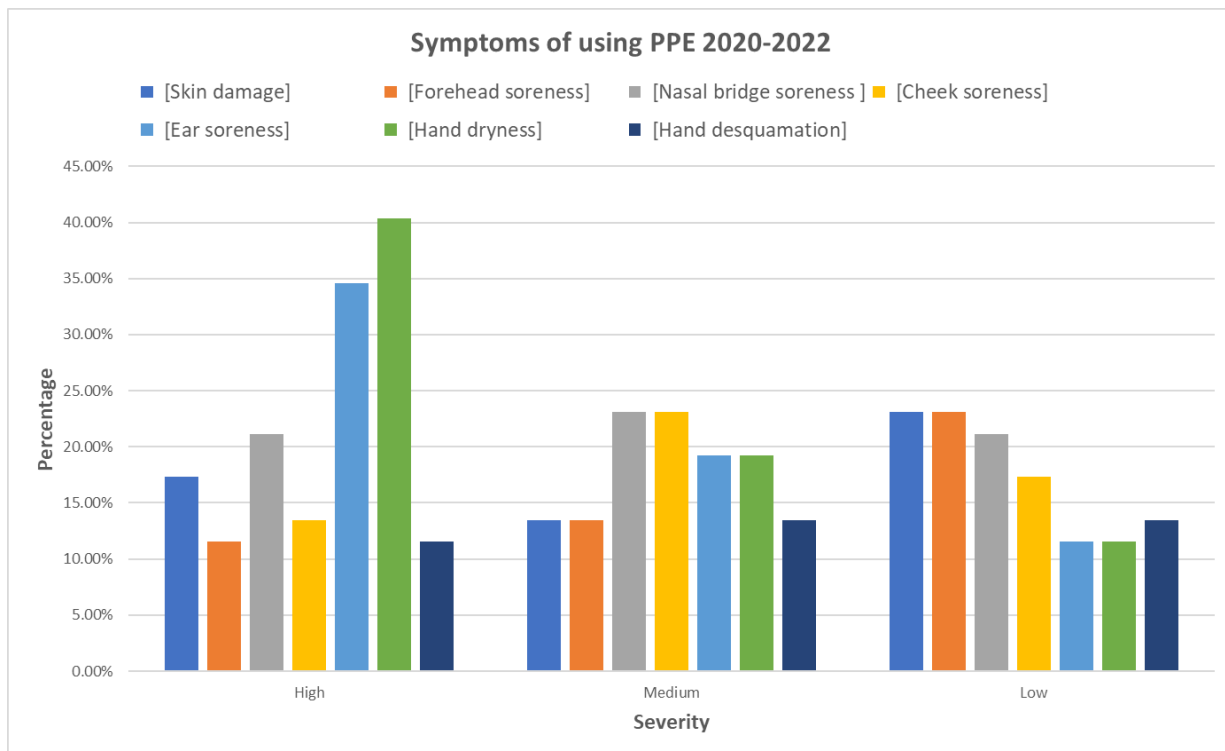
Also, 94.2% considered there was a lack of staff during the pandemic, as mentioned by interviewees *"at the beginning of COVID, nobody wanted to work there, I used to work like sometimes six days a week, like 48 hours. 40 to 48 hours, so, it was a bit heavy"* (C.1, 2022) and *"we lost many staff, was so hard to cover all situations because this hospital said "we are sorry, we are short of staff, more job for the cleaner; the cleaners are short of staff and then blah blah", yeah it was difficult"* (M.1, 2022), and 69.2% considered the lack of staff affect their performance.

Secondary research and the results of the primary research agrees on symptoms and general methods to decompress; the levels of psychological and physical symptoms drop mostly to low level of severity over time, keeping the symptoms in the low and middle levels, it can be said that the level of stress experienced on-the-job, the difficulty of the work to deal with people, and being assigned to different patients of different dimensions, sometimes makes it more difficult to finish the job during the shift, that is why workers continue to be overwhelm at times (Indeed, 2021). These results concord with the secondary research where it contributes to the study of that coping methods allow workers to maintain their regular habits and makes them learn how to manage their symptoms. Only panic breakdown remained consistent during the 2-year period, which is

alarmingly because these persons are unable to keep up with their everyday challenges, interrupting their routine, decisions, and activities. These breakdowns can be triggered by different factors such as stress, poor sleep, tragedies, and life changes (Washington, 2022)

Theme N.-4 PPE usage

In relation to the symptoms arose from the use of PPE during 2020-2022 were perceptible effects (Chutiyami et al., 2022) like hand dryness, ear soreness, and nasal bridge soreness were the highest symptoms, then cheek soreness, as mentioned *“just the mask did something on the cheeks, I scratch my beard, yeah, it was itching about the mask”* (M.1, 2022), skin damage (Lan et al., 2020) *“Yes, the face mask, I had an allergic reaction, OK with the FFP2, and yes, sweating a lot because the radiator on and the hot weather it was very, very bad, and the skin, I had red skin for the sweatiness”* (C.2, 2022), hand desquamation and forehead soreness (Gross, Mohren and Erren, 2021) due to the friction of gloves/masks.



Likewise, interviewees expressed “with the PPE, it was so hot, I used to finish like all red and dehydrated.” (C.1, 2022), and “not only the PPE but like with the chemical, the artichlor, I used to have dryness on my hands, even though we used to have to use gloves. I don’t know why or maybe it was like for the PPE, because like the mask, it has to be like tight, you know. So, I used to feel lines in my face, and then because it was too tight, it was obviously like breathing was a bit difficult or a bit harder” (C.1, 2022)

Also, (Janson, Clift and Dhokia, 2022) human composition and tolerability of PPE handling differs from person to person, and the results are 59.6% of workers have had headaches related to PPE usage just as the research reveals headaches linked with the prolonged usage of PPE (Ong et al., 2020), interviewee said “I also had like headaches after work because, obviously you’re like all the day with that, like you are like having like these difficult difficulties to breathe” (C.1, 2022), and 44.2% expressed the size was not

appropriate for them, as the study (Topping, 2020) says that workers tend to modify their PPE to make them fit. Also, unsuitable PPE exposed HCWs at the time of doffing due to the modifications (Kleinman, 2020), while 55.8% said the sizing of PPE was appropriate for them.

Overall, primary, and secondary data coincide and contributes to each other, the primary research gives an up-to-date information. Yet, in relation to the PPE suitability only 55.8% agree with the size, so in reality this information does not reveal an accurate result. Apart from that the percentages in the results and the ones in the previous research concur, and workers expressed the same symptoms over the whole study.

Nvivo themes from interviews

Two cleaners were among the interviewees, and both disclosed similar approaches on how the work was left for some while others will only be around without helping, therefore the workload became heavier for them *“For the cleaner, the work changed a lot because we were working, doing um a job, OK, that usually did the porters, or the health cares, or the nurse... this job about changing the yellow bins is a Porter job, OK. But during the pandemic, I don't know what happened with the porters, but this job had to be taken by the cleaner.”* (C.2, 2022). The lack of commitment from some workers in performing their tasks put more pressure on others that had to end up doing their job.

Similarly, they mentioned the payment rates and how that influence in the distribution of work. *“Yeah basically, at the beginning of COVID, nobody wanted to work there, like I remember they obviously prefer to go to a simple area. Because we were getting the*

same payment. So, if you have to go and work and you know that this work will be heavier than the normal areas. [] .. But then when the other areas were not that busy, the hours were reduced there, and then you can get a little bit more of hours with covid. Then, people wanted to work in covid because they know they would have hours” (C.1, 2022)

In Ireland, the Government helped by giving the “*Pandemic Unemployment Payment*” (Department of Social Protection, 2020), and that was one of the reasons it was hard to get new staff to work in the hospital during the pandemic. “*People like were preferring to stay at home, get €350 a week, instead of going to work. Like our payment was like €10.80 per hour and people were getting, like if you work 40 hours, you were like, how much? Like €400 and, you can get like €350 staying at home, without have to work like that hard and like even though like putting in risk your life.*” (C.1, 2022).

Moreover, in relation with the behavior between colleagues and departments in the Hospital they mentioned “*we as cleaners, we had a very good training and support from the supervisor and manager, and I think a good feeling between the colleagues, and I think the hospital needs to do that with their staff. Because for example, nurses and doctors are like “I don't care” and for me is like “OK don't care yourself, but you have a colleague who is doing the things very good and for you, it gets infected”, yes, I think a little bit more empathy*” (C.2, 2022), also to support patients and staff, the introduction of psychological help, to have someone with the knowledge, the skills and the proper tools to manage situations beyond staff knowledge “*the hospital need a psychology here because we had patients the weekends, alcoholic patients and drugs dependent patients, who didn't use their face mask, OK and were coughing for all the area. Sometimes I*

thought “no psychologist here in the hospital”, because for me it's usual in Spain to have a psychologist, and you called the psychology and the psychologist go and talk with the patient and try to speak about the situation or check if it has a big problem. And during the pandemic I think a big problem was the drugs and the alcoholic people” (C.2, 2022).

And finally, management and monitor of where the patients are and how they behaved, especially if they have infections they must have restricted movements, not only with COVID patients restrictions must apply, but for all *“I think is the culture, you can be a polite and kind and at the same time you can put your limits, yes for example a lot of patients like “I don't care!” and they are walking in the corridor and nurses said “I can't say anything” and it's like “excuse me!”, he or she has an infection or something and really I am not wearing a PPE, using a face mask to which I'm allergic and after this person is walking everywhere, is spreading the infection for everywhere, sorry. But I think they need a little bit more control on what the patients do” (C.2, 2022).*

These new themes need further investigation and research to look on these areas, that are important factors for staff.

Conclusions

Generally, the comparison of symptoms and drivers for them, has showed that after 2 years, the effects in workers lives have diminished significantly, whereas now they have the opportunity to engage in different activities as a coping method. Uncertainty, anxiety, and fear are no longer factors to consider in their daily lives. The ease of measures in most governments has enable workers to visit their families abroad, spend quality time with their love's ones, and it has helped workers to come back to their routine with a mental stability. In advantage, a high number of workers have experienced PTG and are engage in further options for their new routine.

Practices used in the Hospital showed positive results during the period used, yet new actions are needed because the situation is an ongoing one and outbreaks are coming more regularly.

Frontline workers experienced high severity of psychological and physical symptoms during 2020, and when government measures were ease and their usual coping methods come into their routine again, their symptoms severity lower bringing more comfort to their lives. Symptoms related to the use of PPE were very similar to the ones at the beginning of the pandemic, although less severe during 2022.

Now, during 2022 symptoms are gathered on low levels; stress and workload are easier to manage with no restrictions in place within the country. Workload related to COVID-19 comes and goes depending on the season, during the holidays it tends to increment and during winter season it also increments due to the lack of ventilation in places and gathering of people indoors.

Limitations

Not all personnel were able to participate in the survey or interviews due to the workload at the time of the collection of data if the surveys and interviews could have been extended more time the results could have been more insightful.

Limitation in relation with the time spend on the study, and the availability from the participants was a factor to consider, because the workload in the Hospital was high during the summer, which was the time of the data collection.

As well as limitation in the knowledge to interpret the data or use more incisive tools to do so.

Suggestions

Further research is needed in relation to the subject in place, it is still a relatively new virus a more variants have arisen during these 2 years, the virus keeps evolving, so needs further research. Also, new research is needed to the Nvivo themes discussed in the study.

A bigger sample to have more insightful conclusions. Also, more programmes in Hospitals are necessary to help or ease the pressure from workers facing high stress levels regularly.

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