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Severe Burnout among Public Health Personnel in Penang District Health Office during COVID-19 Pandemic

Abstract – The COVID-19 crisis put a strain on healthcare resources and increasing the risk of burnout. Most studies on health worker's burnout only done among hospital worker and there was limited evidence regarding burnout among district health office worker. There were also no similar studies conducted in local settings. We did a cross-sectional study among 252 health care workers from a District Health Office, Penang using Maslach Burnout Inventory-General Survey (MBI-GS). The level of burnout found in this study was 31.87, which was extremely high. It almost three times the mean score of other studies that uses the same method in this country. Our findings indicate that those who involved with case investigation, sampling and those who had problems with another employee have higher risk of developing burnout. Age has been found to be a protective factor for burnout, where the older the person, the lesser their risk of developing burnout. This study concluded that the key important issue that needs to be tackled are to ease the workflow of case investigation and sampling, and to improve human resource management. Digitalisation is the only solution in easing the task of health workers, because to increase in number of workforces is not something that that can be done immediately.

Keywords – Burnout, professional, COVID-19, digital technology

1. INTRODUCTION

Burnout is defined as a condition where someone experience wear out, or become exhausted by making excessive demands on energy, strength, or resources. It's a phenomenon where someone already burns all their emotional resources and unable to replenish, due to the prolonged interpersonal stressors at workplace [1]. Burnout has been declared as an occupational phenomenon in International Classification of Diseases 11th revision (ICD-11). It is a syndrome characterized by three dimensions; feelings of energy depletion or exhaustion; increased mental distance from one's job, or feelings of negativism or cynicism related to one's job; and reduced professional efficacy [2]. Most studies of burnout among healthcare providers concluded that it leads to reduction in quality of healthcare system through erosion of empathy, suboptimal patient care, unprofessional behaviours, and job withdrawals [3-5]. The COVID-19 epidemic first broke out in Wuhan, Hubei Province China, on 12th December 2019. It was believed to be originated from the Hunan South China Seafood

Market [6]. On the 12th January 2020, the World Health Organization (WHO) announced the cause of this epidemic outbreak was a novel coronavirus discovered in 2019 (2019-nCoV) and named the disease coronavirus disease 2019 (COVID-19) [7]. Since then, it has spread to other countries at an alarming rate. On the 25th of January 2020, the first case of COVID-19 was detected in Malaysia. The number of reported COVID-19 cases grew relatively slowly until a religious event took place at Sri Petaling, Kuala Lumpur in March 2020, which led to an exponential rise in cases [6]. The first case for Seberang Perai Selatan District, Penang was on 12th March 2020, involving the cluster from Sri Petaling gathering. Up to 4th February 2022, there are 386,548,962 confirmed cases of COVID-19, including 5,705,754 deaths reported [8]. For Malaysia, there are total cumulative of 2,799,608 positive cases with total of death reported 32,025 [9].

Malaysia's health service administration was done through Ministry of Health's central, state, and district offices. District health office were under

the jurisdiction of State Health Department. The services provided were Family Health, Disease Control, Occupational Health, Food Quality Control, Health Education and Promotion, as well as Environmental Health and Water Supply Services [10]. Under the disease control service, it includes control of both communicable diseases (CD) and noncommunicable diseases (NCD). Management of COVID-19 cases come under this service that includes contact tracing, risk assessment, sampling, management of Person Under Surveillance, positive case referral [11], home monitoring for positive case and vaccination [12]. Therefore, District Health Office plays a pivotal role in both primary and secondary prevention of COVID-19. Penang is a Malaysian state located on the northwest coast of Peninsular Malaysia, by the Malacca Strait. Penang's population stood at nearly 1.767 million as of 2018, while its population density rose to 1,684/km² (4,360/square miles) [13]. Seberang Perai Selatan District is one of the five districts in Penang, covering an area of 24,200.55 hectares. The district is divided into 16 mukims with a total population of 195,800 people in 2019. From this, 182,400 were local citizen and 13,400 were non-Malaysian [13].

The COVID-19 crisis put a strain on healthcare resources everywhere in the world, and increasing the risk of burnout, therefore the health worker involved should be protected [14]. Most studies on health worker's burnout only done among hospital's worker and there was limited evidence regarding burnout among district health office worker. There were also no similar studies conducted in local settings. Thus, this study will be focused on investigating burnout and the factors related to it among this population. Hopefully, the findings of this study will identify the key problems and can assist in dealing with burnout through better interventions, coping methods, support and better potential strategies tailored according to the worker's needs.

2. MATERIALS AND METHODS

This was a cross-sectional study involving 252 health care workers from Seberang Perai Selatan District Health Office. This study uses questionnaire that consist of three sections. The first section consists of items related to the demographic background of the respondents, the

second section were information regarding working activity, and the third section was the Maslach Burnout Inventory-General Survey (MBI-GS). This was a self-rated questionnaire, originally developed by Maslach and Jackson [15], translated and validated in Malay by Chen, Haniff [16] with Cronbach alpha value of 0.801. It contains 22 items, that grouped into three dimensions, which are emotional exhaustion, depersonalization/cynicism, and personal accomplishment. All items are scored based on the frequency of symptoms that a person experience. The answer to each item assigned on a Likert scale between 0 and 6. This study was approved by the Medical Research & Ethics Committee (MREC), Ministry of Health Malaysia NMRR-21-265-58520. The duration of study was between January to June 2021 and the reference population were all employee of this office. Health workers are defined by all people engaged in actions whose primary intent is to enhance health. In the district health office, there are other workers which are not directly involve in health-enhancing activity, but are essential in the organisation, such as clerks, accountants, and general workers [17]. Therefore, the inclusion criteria were workers who were employed by Ministry of Health Malaysia and have been employed at least for one year, from January to December 2020. This includes non-medical personnel such as administrative workers. Workers under outsource contract were excluded.

The sample size calculation was done in accordance with the objectives. Single proportion formula was used to determine the level of burnout among healthcare workers in this study. To study the factors related to burnout, sample size calculation for linear regression were used. Maximum sample size calculated was 270 [18]. Sampling method used were multilevel sampling. Initially all 270 samples segregated proportionately among nine facilities. Then the proportion calculated, based on count of employee, who are working in the respective facility as the numerator, and the total number of employees in the district were taken as the denominator. Within the selected facility, the employee was chosen randomly. An online proforma was designed to assist in the data collection using Microsoft Forms. No consensus on valid cut-off points have been provided in the literature to determine the presence of occupational burnout, however most studies

divided the scores according to low, medium, or high [19, 20]. As for this study, the cut off point for severe burnout was set as >75th percentiles of the emotional exhaustion total score combined with total score of cynicism [21]. The factors studied were their job position and experiences during working. The job position was the worker's job scope in COVID-19 management in the district. Normal hours of work defined by a working day with hours left for recreation and rest on the same day. The European Working Time Directive 1993 and International Labour Organisation conventions limits working hours to eight per day, including overtime [22, 23]. Therefore, this study defines extended hours of work as working more than 8 hours per day in past one week. Commuting time for more than an hour per day has been proven to have bad health effects [24]. Thus, the classification has been used in this study. The interpersonal relationship among co-workers is one of the risk factors for burnout [5]. In this study, poor relationship defined by conflict with other co-workers and conflict with patient/family member in the past one week.

3. RESULTS

Demography

Demography of the study sample were described in Table 1. The mean (SD) of age of study participant was 35.94 (7.09). The majority were female, 184 (73.2 %), Malay 194 (76.9%), clinical staff 176 (70%). Large proportion of the employee, 72.2% were directly involved in COVID-19 management in the district. Only small proportion of employee, 7% travel >60 minutes to work. Almost half of the study sample, 42% undergone extended hours of work in the past one week. Only small proportion of study sample reported have problems with fellow employee or patients in the past one weeks, 6% and 9% respectively.

Table 1. Demography of study sample (n=252)

	N	%
Gender		
Female	184	73%
Male	68	27%
Race		
Malay	194	77%
Chinese	28	11%
Indian	22	9%
Sabah / Sarawak Aborigines	8	3%

Job Position		
Clinical Staff	176	70%
Environmental Health Officer	32	13%
Human Resource Management	24	10%
Non-Clinical Healthcare worker	20	8%
Job Scope		
Not Involved with COVID-19 Management	70	28%
Part of COVID-19 Management Team		
Triage	55	22%
COVID-19 Sampling	36	14%
COVID-19 Case Investigation	41	16%
COVID-19 Home Quarantine Monitoring	19	8%
Financial and Human Resource Management	17	7%
Vaccination	12	5%
Laboratory	2	1%
Duration of travel to workplace		
<10 minute	68	27%
10-30 minute	125	50%
30-60 minute	41	16%
> 60 minutes	18	7%
Extended hours of work in the past one week		
Yes	105	42%
No	147	58%
Have problems with another employee in past one week		
Yes	15	6%
No	237	94%
Have problems with patients or relatives in past one week		
Yes	22	9%
No	230	91%

The findings of MBI-GS questionnaire are described in Table 2. The study population have low score for Emotional Exhaustion, with Mean (SD) of 8.83(7.22). However, the score for Cynicism/Depersonalisation were high, with Mean (SD) of 23.04 (10.69). The personal accomplishment score was interpreted in an opposite direction from emotional exhaustion and cynicism/depersonalisation. This study population experience low personal accomplishment, with Mean (SD) of 6.69 (6.76). Level of burnout were derived from the combination of Cynicism/Depersonalisation and Emotional Exhaustion score (21). This study reveals that the Mean (SD) of Ex + Cy was 31.87 (14.3).

Table 1. Maslach burnout inventory general survey score (MBI-GS) (n=252)

	Min	Max	Mean	SD
Emotional Exhaustion (Ex)	0	30	8.83	7.77
Cynicism/ Depersonalization (Cy)	0	36	23.04	10.69
Personal accomplishment	0	28	6.69	6.76
Ex + Cy	0	61	31.87	14.3

Factors related to burnout were assessed using simple linear regression, followed by multiple linear regression. There was significant positive linear relationship between being COVID-19 case investigation team, COVID-19 sampling team, and those who had problems with another employee in the past one week, with the burnout score. When other variables were controlled for, those who belong to COVID-19 sampling team will have increased mean burnout score of 9.62, those who reported had problems with other employees in the past one week will have increased mean burnout score of 9.56, and those who belong to COVID-19 investigation team will have increased mean burnout score of 6.25. There was a significant negative linear relationship between age and burnout score. When other variables were controlled for, mean burnout score will reduce by 3.1 with each increment of 10 years of age. The older the person, the lesser their burnout score.

Table 3. Simple and multiple linear regression of factors related to burnout among Seberang Perai Selatan District Health Office worker (n=252)

	^a B	^a 95%CI	^b Adj B	^b Adj 95%CI
Age	-0.44	(-0.69, -0.20) *	-0.31	(-0.56, -0.06) *
Job Position				
Not Involved with COVID-19	0.0	(0.00, 0.00)	0.00	(0.00, 0.00)
Triage	1.0	(-3.78, 5.96)		
Case Investigation	6.2	(0.96, 11.62) *	6.25	(1.07, 11.44) *
Laboratory	14.13	(-5.57, 33.84)		
Vaccination	7.55	(-1.00, 16.09)		
Home Monitoring	1.63	(-5.42, 8.69)		

Sampling	10.90	(4.97, 16.83) *	9.62	(3.77, 15.46) *
Financial and Human Resource	5.16	(-2.22, 12.54)		
Commuting time >1 Hour				
No	0.00	(0.00, 0.00)	0.00	(0.00, 0.00)
Yes	2.00	(-4.90, 8.89)	-0.09	(-6.79, 6.61)
Have problems with another employee in past one week				
No	0.00	(0.00, 0.00)	0.00	(0.00, 0.00)
Yes	11.98	(4.61, 19.34) *	9.56	(2.08, 17.04) *
Have problems with patients or relatives in past one week				
No	0.00	(0.00, 0.00)	0.00	(0.00, 0.00)
Yes	6.57	(0.32, 12.81) *	4.51	(-1.73, 10.75)

Note. Dependent Variable: Mean Need for Care Score, CI: Confidence Interval, a: Simple Linear Regression, b: Multiple Linear Regression, *: P-Value<0.05, F (51,326) = 3.542, p < 0.001, Adjusted R2: 0.10, no multicollinearity

4. DISCUSSION

Prevalence of burnout among healthcare provider is continuously high [4]. It differs according to job scope, either doctors, nurses, or other health workers [3, 5]. During the COVID-19 pandemic, the risk of health workers developing burnout were even higher [25, 26]. A high prevalence of burnout among public health officers has been reported by few recent studies that has been done during this COVID pandemic [27-29]. There was limited study that uses the same questionnaire; therefore, comparison can only be done with other studies before COVID-19 pandemic. The level of burnout among this study population were extremely high, almost three times the mean score of other studies that uses the same method. The Mean (SD) of Ex + Cy score for this study was 31.87 (14.3), compared to 18.3 (11.59) in a study among childminder’s (21), and 15.9(8.08) among junior doctors [30]. While researchers worldwide are researching several approaches to prevent and cure the COVID-19 threat, the psychological impact on HCWs has also been evaluated.

However, administrators of healthcare organisations are not taking many actions to

reduce the consequences of psychological strain on HCWs. The World Health Organization (WHO) paper on psychological considerations during COVID-19 clearly mentioned that the COVID-19 pandemic has caused this situation to occur [31]. Since this country was hit by this epidemic, health workers, especially those in the district health offices have been hit with huge work burden. In particular, the team involved with the investigation of the case, which consist of Environmental Health officers. Once a notification for positive COVID-19 cases received, the Assistant Environmental Health Officer will immediately verify, and investigate the case. That include contact tracing which involves household, friends, workplace, and the places that visited by the patient within their incubation period [32, 33]. During this period, contact tracing was the core activity to curb disease spread, because the National COVID

Vaccination Programme was only at phase 1 which only involves frontline workers [33]. Manual contact tracing was the mainstay technique used because there was no digital contact tracing established at that time [34]. The e-COVID system was still immature and cannot fulfil the need of the investigating team, therefore the system was abandoned [35]. Similarly, there were limitation in the usage of *MySejahtera*. Using manual contact tracing, it requires huge amount of manpower because it is a hectic process [36]. However, there were no additional manpower. Even with all the limitations, the contact tracing must be done within 24 hours. This has forced the officers to work until late at night and often not able to cope with the huge number of workloads. This explained the relationship between being the investigating team with severe burnout. According to the COVID-19 management guideline during this study period, whenever there is a positive case, the contacts need to undergone Real Time- Polymerase Chain Reaction (RT-PCR) test, that need to be done by health personnel [32]. For one positive case, the close contacts list was limitless, one can easily reach 50 close contacts. The more the cases, the burden for sampling team increased, with no increment of manpower.

Sampling also must be done every day including weekend and public holidays. The sampling process is very tiring, and the situation is further aggravated by the application of full PPE [37]. Therefore, being part of sampling team were significantly related to severe burnout. Similar findings have been described by previous study, where one of the factors that lead to burnout were

workforce factor, whether lack in number, maldistribution, or inefficient workflow [29, 36, 38]

In this study, poor relationship with co-workers and younger age has been found to be positively related to burnout. This is consistent with other studies that highlighted the workplace environment, and personal factors like age were found to be predictive of burnout syndrome across the literature [4, 5, 39-42]. Older workers have known to have higher emotional wellness and have better adaptation capability compared to younger workers. In this study, the mean age of health workers was 35.94. This shows that the proportion of younger and older generation were well distributed. However, most of younger generation consist of contract workers, which also predispose them to poor coping capability [43]. In this study, only 6% reported to have problems with another co-workers, yet the association with severe burnout were significant. This is because one must depend on other co-workers in completion of a task. For example, in the handling of symptomatic cases, medical officers at the clinic need to complete patient data, to be utilised by the sampling team to fill out laboratory forms and quarantine instructions. When the result is positive, the same data will be used for case registration and close contact screening. without good cooperation between the various categories of staff, this task will become very difficult.

Relationship with co-workers also influenced by the supervisors and managers. Low quality of supervision, and poor resource planning were also one of the factors that leads to poor relationship among co-workers across studies [4, 41]. The leadership qualities of supervisors appear to impact the well-being and satisfaction of co-workers in health care organizations [44].

5. CONCLUSION

This COVID-19 pandemic will not end any time soon, and burnout among health workers has been reported around the world. The evidence is clear, that to reduce the impact of burnout towards Public Health personnel, key important issue that need to be tackled are to ease the workflow of case investigation and COVID-19 sampling, and to improve human resource management.

6. RECOMMENDATION

Digitalisation is the only solution in easing the task of health workers because to increase in number of workforces is not something that that can be done now. Age was often used as the barrier for

digitalisation, as senior workers were accused as not digital savvy, but changes must be made. For the senior health workers, more digital support and training should be provided. The digital solution like e-COVID and MySejahtera have undergone tremendous improvement since this study were done, where integration with the existing system have been made. Our suggestion is, if more control given for the ground level workers to manipulate the system, it would be better. Added features to help managers and supervisor manage the workforce more efficiently are also needed. Future research into burnout should focuses on the efficiency of the existing system that have been implemented in an organisation.

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