

Original Research Article

The Danger of COVID-19 and Health of Waste Management Front Liners

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Abstract

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Intensive care for waste management workers as emergency must be skilled in providing end-of-danger to their health. Crucial in this kind of care is end-of-danger decision-making, which is a complex process involving a variety of stakeholders and requiring adequate justification to safety and good health. The aim of this systematic survey is to analyze approach tackling ethical issues in relation to the danger of COVID-19 and the Health of waste management front liners, for intensive care approach. It explores the ethical positions, arguments and principles of waste management and their exposure to COVID-19 waste from known and unknown. A survey form search was conducted in e-databases and grey literature sources for the time period of month. The constant comparative method was used for qualitative and quantitative analysis which include online and papers survey form in order to identify ethical content including ethical positions, waste disposal, ethical arguments, equipment's used, and ethical principles used in the decision-making process in halting the danger of COVID-19 with and of waste management front liners. In the Tables 1, 2 and 3 we have identified a good number of unethical positions and practises among the waste management front liners. Five positions were identified as substantive, the unavailability of the most essential preventive equipment such; as Overall coat, Booths, Hardware gloves, and Mask (Mouth and Face) not available responses with percentage rate of 49.1%, 4.55%, 73.71%, 68.10%, and 66.67% when compared to the total number of respondent, which may cause a threat to the fight of this Virus if this groups needs and welfare is neglected. We have demonstrated that recommendations and guidelines designed specifically by intensive or critical care experts for intensive care units to consider and promote the waste management front liners as one arm of government fighting the menace of COVID-19 by Making the communities and surrounding clean and hygiene.

Keywords: CONVID-19, Danger, Front Liners, Gloves, Health, Management, Mask, Waste

INTRODUCTION

The causative agent of this mysterious pneumonia was identified as a novel coronavirus (nCoV) by several independent laboratories (Lu et al., 2020, Zhou et al.,

2020, Zhu et al., 2020). The causative virus has been temporarily named as a severe acute respiratory syndrome corona virus 2 (SARS-CoV2) and the relevant

infected disease has been named as coronavirus disease 2019 (COVID-19) by the World Health Organization, respectively (Sohrabi et al., 2020)

Coronaviruses (CoVs) are a group of highly diverse, enveloped, positive sense, and single stranded RNA viruses (Zumla et al., 2016). They cause several diseases involving respiratory, enteric, hepatic, and neurological systems with vary severity among humans and animals (Chan et al., 2013). Human CoV infections have traditionally caused a low percentage of annual respiratory infections. There are HCoV-OC43, HCoV229E, HCoVNL63, and HCoVHKU1, which cause mild respiratory illness (Zumla et al., 2016, Chan et al., 2013). Over the past 2 decades, two novel CoVs, severe acute respiratory syndrome CoV (SARSCoV) and Middle East respiratory syndrome CoV (MERS-CoV), have emerged and caused severe human diseases (Cheng et al., 2007, Chan et al., 2015)

During the epidemic, SARS-CoV infects more than 8000 people worldwide with nearly 800 fatalities, representing its mortality rate around 10%. Whereas MERS-CoV infected over 857 official cases and 334 deaths, making its mortality rate approximately 35% (Gretebeck et al., 2015, Drosten et al., 2003). So far, SARS-CoV-2 is the seventh member of the family of CoVs that infects humans. The main symptoms of COVID-19 included fever, fatigue, and cough, which are similar to that of SARS, CoV and MERS, CoV infected cases (Liu et al., 2020)

This major epidemic focus of coronavirus disease (COVID-19), which has been identified and is rapidly expanding in Europe, North America, Asia, and the Middle East, with the few confirmed cases being identified in African and Latin American countries. The number of cases of COVID-19 outside China had increased drastically and the number of affected countries, states, or territories reporting infections to WHO was on a daily basis of “alarming levels of spread and severity, and by the alarming levels of inaction, the Director-General of WHO characterized the COVID-19 the situation as a pandemic. The WHO Strategic and Technical Advisory Group for Infectious Hazards (STAG-IH) regularly reviews and updates of its risk assessment of COVID-19 to make recommendations to the WHO health emergencies program. STAG-IH included an update of the global COVID-19 situation. The STAG-IH emphasizes the importance of the continued rapid sharing of data of public health importance in medical journals that provide rapid peer review and online publication without a paywall. It is sharing of information in this way, as well as technical collaboration among clinicians, epidemiologists, and virologists, that has provided the world with its current understanding of COVID-19 (Bedford et al., 2020), with this the update of emergency of the the Danger of CONVID-19 and health of waste management front liners should be considered seriously as it may be another loophole on the line.

Waste management and waste disposal worker are front liners in the cause of the fight of COVID-19. There are two main routes of transmission of the COVID-19 virus: respiratory and contact. Respiratory droplets are generated when an infected person coughs or sneezes. Any person who is in close contact with someone who has respiratory symptoms (for example, sneezing, coughing) is at risk of being exposed to potentially infective respiratory droplets.(WHO, 2020).

Droplets may also land on surfaces where the virus could remain viable; thus, the immediate environment of an infected individual can serve as a source of transmission (known as contact transmission). From this information, we are made to understand that the waste disposal workers are at forefront risk of getting the virus if there are no proper cares and safe disposal of this waste not standardized (WHO).

However, it is not certain how long the virus that causes COVID-19 survives on surfaces, but it seems likely to behave like other coronaviruses. A recent review of the survival of human coronaviruses on surfaces found large variability, ranging from 2 hours to 9 days. The survival time depends on a number of factors, including the type of surface, temperature, relative humidity and a specific strain of the virus. The same review also found that effective inactivation could be achieved within 1 minute using common disinfectants, such as 70% ethanol or sodium hypochlorite (Eponyms et al., 2001).

The aim of this survey was to bring to the notice of the Danger of CONVID-19 and the Health of Waste Management field workers as front liners.

METHODOLOGY

Study Design

The study design combines both quantitative and qualitative research .A cross-sectional study design for quantitative data. (i.e. investigations and data collections have been undertaken simultaneously only at one time, and allows statistically inferences) is chosen as it is best suited to study existing situations, problems, and phenomena. Observation and interviews was used for qualitative data (i.e., naturalistic observations of respondents or to uncover unknown phenomena and behaviors (Meekosha, 2009).

Questionnaire Design

The first stage of this research was to develop a questionnaire as a means to collect primary data from people involved directly or indirectly in waste management. The purpose of this data is to achieve the research objectives. The research question and objective provide ground for the questionnaire design. Close-

Table 1. The demographic structure of respondents showing age range and sex

Age range	Number of respondents	Male	(%)	Female	(%)
20-29	400	280	70.0	120	30
30-35	350	250	71.43	100	28.57
36-41	300	230	76.67	70	23.33
42-47	310	235	75.81	75	24.19
48-53	356	250	70.23	106	29.78
54-59	317	217	68.45	100	31.55

Table 2. Availability of equipment and safety materials

Question	Responses										
	Total No		Male		Female		Indecisive				
	yes	%	No	%	Yes	%	No	%	Nu	%	
Overall coat available	210	13	6.5	103	49.1	10	4.76	60	28.57	14	6.67
Booths available	220	2	0.9	120	54.55	5	2.27	85	38.64	10	4.55
Hardware gloves	251	13	5.18	185	73.71	3	1.20	50	19.92	16	6.35
Mask (Mouth and Face)	232	23	9.91	158	68.10	38	16.38	3	1.29	10	4.3
Helmet	120	2	1.67	80	66.67	1	0.83	30	25	7	5.83
Disinfectants	200	89	44.5	77	38.5	14	7	12	6	8	4
Overall coat available	124	11	8.87	59	47.58	15	12.1	20	16.13	19	15.32

ended questionnaire was used and administered to sampled area UNIMAS, Kota-Samarahan, Sarawak Malaysia. A close-ended questionnaire which produce a greater level of responses (Gillham (2000), which produces accuracy in results and data (Seliger and Shohamy, 1989) were considered in the survey.

The questionnaire seeks responses on the danger of CONVID-19 and health of waste management front liners. Opinion was sought on and requires indicate YES or NO as well as Likert scale. For example:

Waste Management Community response Survey form on the Danger of CONVID-19 and Health of Waste Management Front Liners (One form should be completed for each person)

- Age: _____ Sex: _____
- Address _____
- Occupation: _____
- 4. Waste disposal**
- Type of waste _____ Present _____ Absent
- Collection of waste: Government _____ Organization _____ Self. _____ No in a week _____ Manual _____ Mechanical _____
- Disposal deport available: _____ Treated _____ Not treaded
- 8. Equipment used**
- Overall coat: _____ Booths _____ Hardware glove. _____ Mask _____ Helmet _____ Any disinfectant used _____
- 10. Vehicle used**

Truck _____ Waste truck _____ Bus _____ Car _____
Foot _____

11. Time of Collection

Morning _____ Afternoon _____ Evening _____
Night _____
12: Added Information _____

DISCUSSION AND RESULTS

The results as shown in Table 2 indicated that the respondents answered yes that the availability of equipment and safety materials as of; Overall coat, Booths, Hardware gloves, Mask (Mouth and Face), Helmet, disinfectants and overall coat was reported to be 6.5%, 0.9%, 5.18%, 9.91%, 1.67%, 44.5% and 8.87% for male. The female respond yes was observed of 4.76%, 2.27%, 1.20%, 16.38%, 0.83%, 7% and 12.1% respectively, when compared to the No respondent. From this result it shows that less consideration as regards the supply of equipment and safety material is less, with the exception of disinfectant.

The results of Table 3 show that, what time and how many times the waste materials are collected, mode of the collection were respondents. The answered yes that the waste are household, Clinical, Government, Self, Community, Monthly, Weekly, Twice, Manual and Mechanical was 26.675, 0%, 43.36%, 23.33%, 30%, 34.35%, 65.31%, 22.35%, 50% and 33.33% for male and 180%, 10%, 110%, 18%, 10%, 120%, 60%, 150%, 79%, and 40% for female respondent.

Table 4 results show that the respondents answered

Table 3. Government and safety of waste disposal site

Question: Type, Collection of waste, and how many times	Responses										
	Total	Male				Female				Indecisive	
		yes	%	No	%	Yes	%	No	%		Nu
Household	300	80	26.67	20	6.67	180	60	12	4	8	2.66
Clinical	12	0	0	0	0	10	83.3	2	16.7	0	0
Government	275	133	43.36	12	4.37	110	40	15	5.45	5	1.82
Self	100	23	23	50	50	18	18	5	5	4	4
Community	20	6	30	2	10	10	50	2	10	0	0
Monthly	233	80	34.35	10	4.29	120	51.5	5	2.15	13	5.58
Weekly	245	160	65.31	5	2.04	60	24.5	15	6.12	5	2.04
Twice	255	57	22.35	8	3.14	150	58.8	35	13.73	5	1.57
Manual	230	115	50	25	10.87	79	34.35	8	3.48	3	1.3
Mechanical	120	40	33.33	20	16.67	40	33.33	12	10	8	1.67

Table 4. Movement and time of waste material from site to deport

Vehicle and Time of Collection	Responses										
	Total	Male				Female				Indecisive	
		yes	%	No	%	Yes	%	No	%		Nu
Government vehicles	250	150	60	25	10	70	28	4	1.67	1	0.4
Waste truck	255	145	56.86	16	6.27	80	31.37	12	4.71	1	0.39
Bus	260	15	5.77	200	76.92	25	9.62	14	5.38	6	2.31
Car	240	5	2.08	175	72.92	60	25	3	1.25	2	0.83
On foot	180	0	0	140	77.78	35	19.44	4	2.22	1	0.56
Morning	150	45	30	80	53.33	15	10	5	3.33	5	3.33
Afternoon	160	12	7.5	100	62.5	40	25	4	2.5	4	2.5
Evening	240	166	69.17	40	16.67	20	8.33	12	5	2	0.83

yes that the time and movement of waste material from site to deport was reported to be male to be 150% 145%, 15%, 5%, 0%, 45%, 12%, and 166%. While 28%, 31.37%, 9.62%, 25%, 19.44%, 10%, 25% and 8.33% was responded by the female.

The Number of respondent yes in all the three Table indicated that less concern was observed towards the health and welfare of the waste management front liner as regards the danger of COVID-19 and the importance of cleanness and distancing. The exposure of this front-liners can be another new cluster if these reports are not adhered to and respond to immediately, because they are more accessible to waste from the infected and non-infected person that has not been officially identified and/ treated.

CONCLUSION

It is understood that wastes is a direct result of human interaction and activities. However, there seem to be several schools of thoughts as to what constitutes a waste. Many researchers however agreed that wastes

are materials whose owners no longer have a need for. Therefore, it is obvious that wastes is indeed subjective in meaning, as the term is open to several interpretations and also influenced by personal opinion. Nevertheless, it is important the need of a guide for the purposes of policies and legislations. This is evident from the fact that it is the knowledge of what specifically constitute waste and the categories of wastes that determines how wastes are dealt with or managed. Frontlines and waste management involves a process whereby wastes are collected, transported and disposed of in the best possible way of limiting or eliminating the harmful effects of wastes. This aspect of environmental management is as important as other public health sectors, amenities and other front liners, like the doctors, nurses, securities or infrastructures without which the life of contemporary man would be extremely difficult. These studies have shown the front liners to a direct link exposed airborne, water and land pollution and diseases such as cholera, hepatitis and now COVID-19. Little wonder why there is a huge disparity when it comes to the health of the waste management frontlines. Their health should be considered as a very impotent arm in the course of the

fight of COVID-19 to avoid unnecessary spread. As such necessary equipment to protect themselves should be supplied to them whenever on duty.

RECOMMENDATION

The coming together of people to form communities lead the increased waste generation. Efforts should be directed towards making projections far ahead in order to ensure that the front lines are supplied with proper equipment's ready to fight the health challenges effects as result of the increasing waste in our communities and the world at large to avert this evil forces.

Declaration of competing for interest

The authors indicated no conflicts of interest to declare

REFERENCES

- Bedford J, Enria D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G, Ungchusak K (2020). COVID-19: towards controlling of a pandemic. *The Lancet*.
- Chan JF, Chan KH, Kao RY, To KK, Zheng BJ, Li CP, Hayden FG (2013). Broad-spectrum antivirals for the emerging Middle East respiratory syndrome corona virus. *J. Infection*, 67(6), 606-616.
- Chan JF, Lau SK, To KK, Cheng VC, Woo PC, Yuen KY (2015). Middle East respiratory syndrome coronavirus: another zoonotic beta coronavirus causing SARS-like disease. *Clinical microbiology reviews*, 28(2), 465-522.
- Channappanavar R, Zhao J, Perlman S (2014). T cell-mediated immune response to respiratory coronaviruses. *Immunologic research*, 59(1-3), 118-128.
- Cheng VC, Lau SK, Woo PC, Yuen KY (2007). Severe acute respiratory syndrome coronavirus as an agent of emerging and re-emerging infection. *Clinical microbiology reviews*, 20(4), 660-694.
- Drosten C, Günther S, Preiser W, Van Der Werf S, Brodt HR, Becker S, Berger A (2003). Identification of a novel coronavirus in patients with the severe acute respiratory syndrome. *New Eng. J. Med.* 348(20), 1967-1976.
- Eponyms AJOG (2001). Email/Username: Password: Remember me. *Ame. J. Obs/Gynaecol.* 218(2), 161-180.
- Gillham JE, Shatté AJ, Freres DR (2000). Preventing depression: A review of cognitive-behavioral and family interventions. *Applied and Preventive Psychology*, 9(2), 63-88.
- Gralinski LE, Baric RS (2015). Molecular pathology of emerging coronavirus infections. *The J. Pathol.* 235(2), 185-195.
- Gretebeck LM, Subbarao K (2015). Animal models for SARS and MERS coronaviruses. *Current opinion in virology*, 13, 123-129.
- Liu J, Zheng X, Tong Q, Li W, Wang B, Sutter K, Yang D (2020). Overlapping and discrete aspects of the pathology and pathogenesis of the emerging human pathogenic coronaviruses SARS-CoV, MERS-CoV, and 2019-nCoV. *J. Med. Virol.*
- Lu R, Zhao X, Li J, Niu P, Yang B, Wu H, Bi Y (2020). Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *The Lancet*, 395(10224), 565-574.
- Meekosha H, Shuttleworth R (2009). What's so 'critical' about critical disability studies? *Australian J. Human Rights*, 15(1), 47-75.
- Seliger HW, Seliger H, Shohamy EG, Shohamy E (1989). *Second language research methods*. Oxford University Press
- Sohrabi C, Alsafi Z, O'Neill N, Khan M, Kerwan A, Al-Jabir A, Agha R (2020). World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). *Int.J. Surg.*
- World Health Organization. (2020). Water, sanitation, hygiene and waste management for COVID-19: technical brief, 03 March 2020 (No. WHO/2019-NCoV/IPC_WASH/2020.1). World Health Organization.
- Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, Chen HD (2020). A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*, 579(7798), 270-273.
- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, Niu P (2020). A novel coronavirus from patients with pneumonia in China, 2019. *New Eng.J. Med.* 382(8), 727-733.
- Zumla A, Chan JF, Azhar EI, Hui DS, Yuen, K. Y. (2016). Coronaviruses—drug discovery and therapeutic options. *Nature reviews Drug discovery*, 15(5), 327.