COVID19

DEATH AUDIT REPORT

August 2020

Department of Health & Family Welfare

Government of Kerala

DEATH AUDIT REPORT OF COVID-19 RELATED DEATHS- OCCURED DURING AUGUST-2020

1. INTRODUCTION

The State Level Death Audit Committee met at 10.30 AM on August 18th and 25th and also on September 11th for auditing the COVID related deaths occurred during August and September 1st week via Google meet ID: id: https://meet.google.com/fjv-raro-nom The committee reviewed the death reports received from the districts till August and finalized the cause of death as COVID-19/Non-COVID-19. The meeting ended at 6 pm.

For the purpose of assigning the cause of death the definitions of WHO and ICD classification were followed.

1.1 Definition of COVID-19 death

A COVID-19 death is defined for surveillance purposes as a death resulting from a clinically compatible illness in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID-19 disease (e.g. trauma). There should be no period of complete recovery between the illness and death.

1.2 Definitions based on International Statistical Classification of Diseases (ICD)

An emergency ICD-10 code of 'U07.1 COVID-19, virus identified' is assigned to a disease diagnosis of COVID-19 confirmed by laboratory testing.

An emergency ICD-10 code of 'U07.2 COVID-19, virus not identified' is assigned to a clinical or epidemiological diagnosis of COVID-19 where laboratory confirmation is inconclusive or not available. Both U07.1 and U07.2 may be used for mortality coding as cause of death.

In ICD-11, the code for the confirmed diagnosis of COVID-19 is RA01.0 and the code for the clinical diagnosis (suspected or probable) of COVID-19 is RA01.1.

1.3 References

1) World Health Organization. COVID-19

2) Coding in ICD-10. https://www.who.int/classifications/icd/COVID-19-19-coding-icd10.pdf

2. MATERIALS & METHOD

The information was collected from the DIR (Death investigation report) received from the Districts and Medical Bulletin issued by the concerned Medical Colleges/ Tertiary Health care facilities where the patient had attended eventually. A total of 77 deaths were audited on August 18th; 76 deaths on 25th August and 99 deaths on September 11th. Information of various demographic parameters, clinical and laboratory findings, details of treatment and surveillance were obtained wherever possible.

3. RESULTS

3.1 Overview

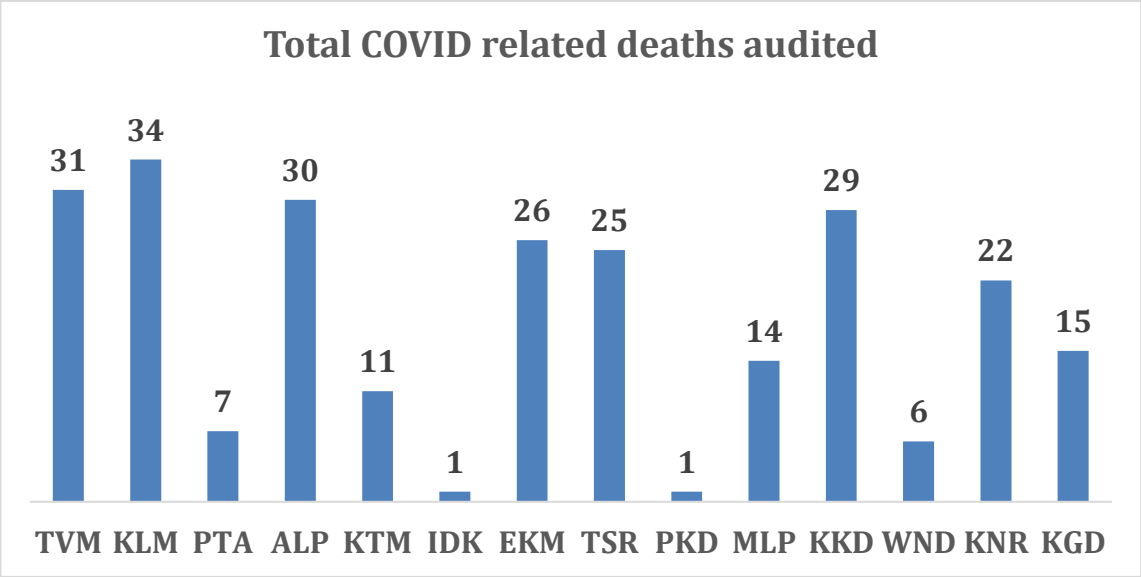
Of the 252 deaths 223 were identified as COVID-19 to be the underlying cause of death as per the WHO definition. There were 20 Non-COVID-19 deaths and 9 were kept pending.

Table.1. Overview of the deaths audited

Classification	Number
COVID deaths	223
Non-COVID deaths	20
Kept Pending	9
Total deaths audited	**252**

3.2 District wise distribution of COVID related deaths audited (n=252)

Fig.1. The district wise distribution of the 252 deaths audited.



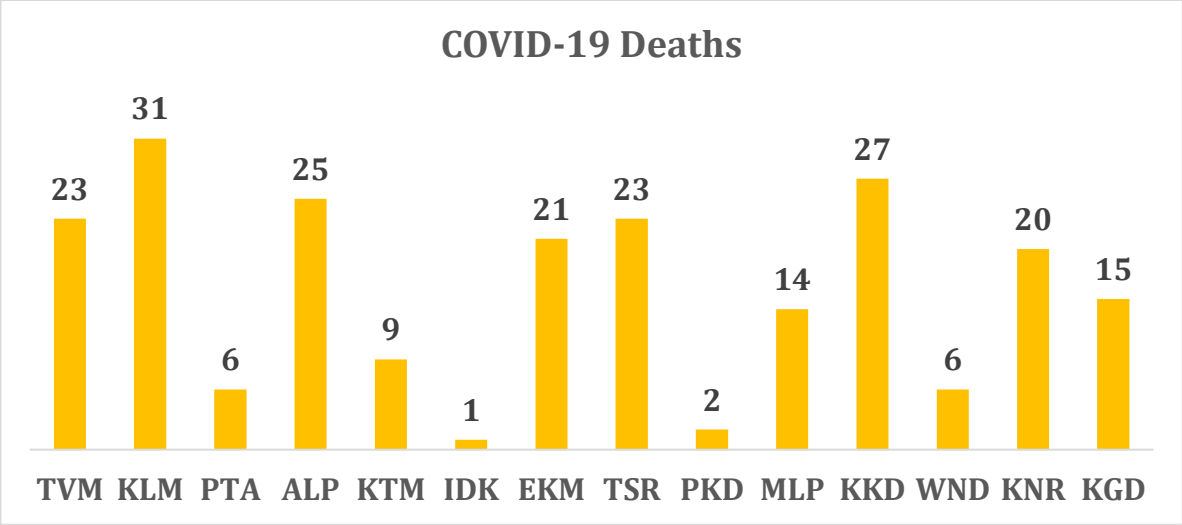
Among the audited deaths, seven districts reported 20 or more deaths. (Thiruvananthapuram, Kollam, Alappuzha, Ernakulam, Thrissur, Kozhikode and Kannur). The maximum number of deaths were from Kollam district.

3.3 Analysis of COVID Deaths

A total of 223 deaths were classified as to have the underlying cause of death as COVID-19. The results are summarized in tables and figures.

District wise distribution of COVID deaths

Fig.2 District wise distribution of COVID deaths.



Among deaths where the underlying cause of death was COVID-19, there were seven districts with 20 or more deaths. (Thiruvananthapuram, Kollam, Alappuzha, Ernakulam, Thrissur, Kozhikode, Kannur).

Age distribution of COVID deaths

The mean age of the COVID-19 deaths was 63.5 years with a standard deviation of 13.1. The minimum age of death was 7 months and the maximum age was 97 years. Age is an established determinant of COVID-19 mortality. The chance of death due to COVID-19 is likely to be higher as age increases.

Fig.3.Distribution of age of COVID deaths

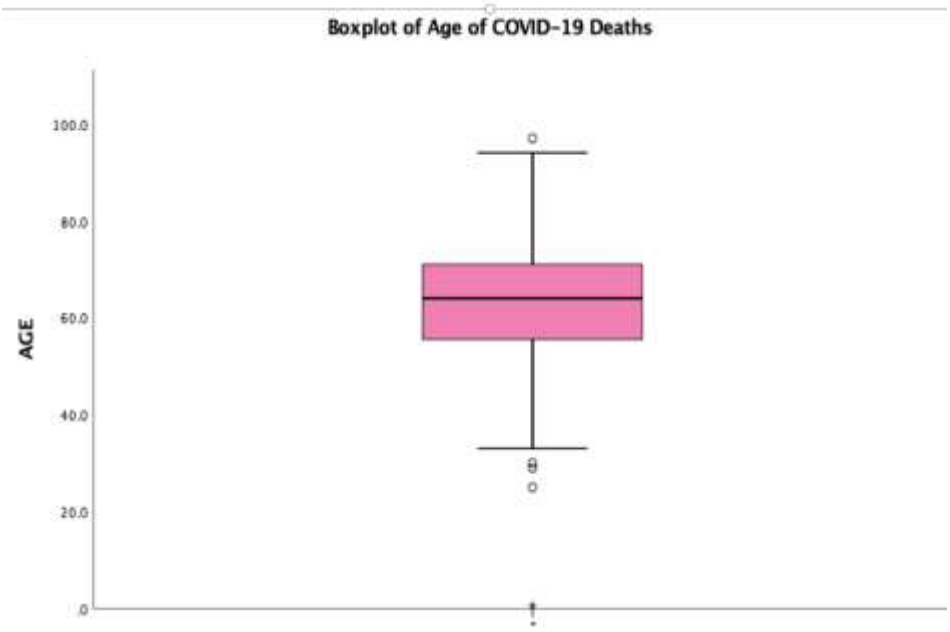
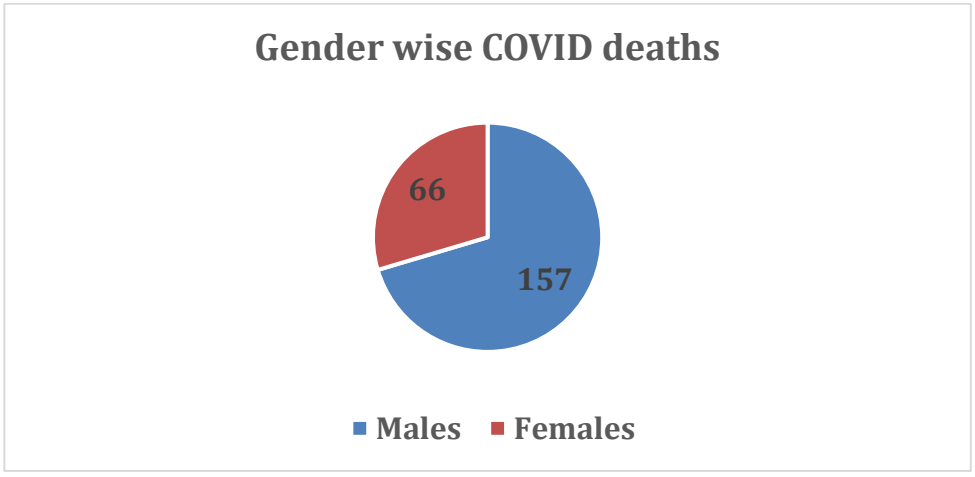


Fig.4 Gender distribution of the COVID-19 deaths audited



There were more deaths among the males. This pattern is similar to the one observed worldwide.

Distribution of comorbidities among the COVID deaths

Table.2 Presence of comorbidities among the COVID-19 deaths audited.

Comorbidities	N	%
Hypertension	116	46.0
Diabetes	120	47.6
Cancer	15	6.0
CAD	54	21.4
CVA	17	6.7
COPD	23	9.1
CKD	36	14.3
CLD	8	3.2
Bedridden	5	2.0
No comorbidities	2	0.8

Comorbidities like hypertension and diabetes, Coronary Artery Disease, Chronic Kidney Disease and cancer are also established determinants of mortality in COVID-19. A similar pattern is also observed in the audit.

Other Observations

Dialysis Centers, Oncology wards and Cancer Care Centers.

- These centers providing care to high risk patients and severely morbid patients seeking should ensure strict IPC.

Failure of reverse quarantine

- Failure of reverse quarantine was observed in 61 (24%) of the COVID deaths. Mortality may be prevented by vigilant observation of reverse quarantine.

Brought dead

- There were 13 (5%) cases of brought dead to the hospitals.

3.4 NON-COVID Deaths

There were 20 deaths where the underlying cause of death was not COVID- 19.

Table.3 Non-COVID Deaths

Cause of Death	Number
Drowning	1
Perforation Peritonitis	1
Acute Infarct	1
Suicide	2
Myocardial Infarction	4
Intracranial Bleeding	7
RTA	1
Cerebral palsy, intestinal obstruction and septic shock	1
Candidemia sepsis	1
NIV Result Negative	1
Total	20

3.5 Pending cases

Nine cases were set aside as pending cases due to lack of clinical information and test results.

4. RECOMMENDATIONS

- IPC (Infection Prevention and Control) practices should be strengthened with special emphasis to 'Dialysis Centers', Oncology wards and Cancer Care Centers.

- Special precautions should be taken for persons with co-morbidities. IEC/BCC should be strengthened to bring **awareness on reverse quarantine**. The importance of reverse quarantine should be reemphasized and the practice monitored using the grass root level workers. **Vulnerable persons even if mildly symptomatic should be tested for COVID-19.** Antigen testing may be increased to improve surveillance. Contact tracing, testing and treatment should be followed.
- Each peripheral health institution should review the mapping of elderly and severely comorbid patients in their respective field areas. Ensure that health education and motivation are provided to these households so that reverse quarantine can be ensured. Symptom surveillance should be strengthened in these households. These persons may be motivated to monitor oxygen saturation so as to enable early detection of signs and complications and prompt health seeking.

- Precautions should be taken at the community level on safe social distancing, use of masks, hand hygiene and sanitization. Crowding and visiting crowded places should be avoided. SMS to be followed always especially in market places, Bazars, public transport etc.
- At the health institutional level, work rotation, buddy systems may be implemented. At institutions thermal scanning and use of mask and hand

sanitizer may be implemented prior to entry of staff to their working space/cabins.

- In brought dead cases, when cause of death cannot be assigned, a postmortem report or verbal autopsy form should be submitted. Swab testing of the brought dead persons should be done as per the protocol. (Post mortem of COVID-19-19 confirmed patients; dying while under treatment for COVID-19 is not required for classifying the underlying cause of death as COVID-19 or Non-COVID-19 death.)

- A verbal autopsy format was finalized for use in case inconclusive evidence was submitted. This should be filled by the concerned PHC/CHC Medical officer and submitted to the State death audit team through the DSO. Swab testing of the brought dead persons should be done as per the protocol. (ppostmortem of COVID-19 confirmed patients; dying while under treatment for COVID-19 is not required for classifying the underlying cause of death as COVID-19 or Non-COVID-19 death.). Gaps in histories of brought dead cases should be solved by verbal autopsy when there is insufficient information and autopsy report is not available

- Infection prevention and control practices (IPC) should be optimized in COVID-19 and non-COVID-19 health settings. Training to all categories of health staff has to be given periodically. Attenders and Nursing Assistants have to be given warming up training sessions everyday a few minutes prior to entry to their duties by the Head Nurse. They should be provided with N-95 masks, face shields and gloves. Training on use and disposal of PPE to be given periodically.

- Field level, grass root workers have to be trained periodically on community prevention practices, including BCC on SMS (safe distancing, use of masks and hand sanitization)

- At FLTC's and CCC's should strictly adherence to surveillance and referral protocol. Strict adherence to checklist on patient care and referral from FLTC's and uses of pulse oximeters, so that patient referral may be optimal to higher centers. Fatigability should be assessed as a symptom for surveillance of COVID-19.
- Training of volunteers for improving community participation in social distancing should be done and experience certificates may be provided for their activities
- The institutional medical boards should be sensitized on identifying cause of death as per International guidelines.

Details of deaths where the underlying cause of death is not COVID-19 and those excluded from Kerala COVID death list.

Sl. no	DISTRICT	CODE OF DISEASED	AGE	GENDER	DATE OF DEATH	CAUSE OF DEATH, COMORBIDITY	UNDERLYING CAUSE OF DEATH (COVID/NON-COVID)
1	KNR	SDAC 18/8/20-6	63	M	23/07/20	Myocardial Infarction	NON-COVID
2	TVM	SDAC 18/8/20-14	35	M	26/07/20	Accelerated HTN, Pontine H-ge, intra ventricular extension	NON- COVID
3	PTA	SDAC 18/8/20-15	73	M	26/07/20	CA COLON, Perforation peritonitis	NON-COVID
4	KNR	SDAC 18/8/20-16	70	M	26/07/20	DROWNING	NON- COVID
5	EKM	SDAC 18/8/20-17	65	M	27/07/20	Myocardial Infarction, DM	NON-COVID

6	TVM	SDAC 18/8/20 -20	86	F	28/07/2 0	Acute infarct (L) frontal region, DM, HTN, CVA, urosepsis, AKI, Respiratory failure- Type 1	NON COVID
7	TVM	SDAC 18/8/20 -42	70	M	03/08/2 0	Acute subarachnoid/s ubdural hemorrhage, CVA, HTN, DM, CAD	NON COVID
8	TVM	SDAC 18/8/20 -43	50	M	03/08/2 0	Right Fronto-temporal bleed, HTN, CVA	NON COVID
9	TSR	SDAC 18/8/20 -45	48	M	03/08/2 0	SUICIDE-HANGING	NON-COVID
10	TVM	SDAC 18/8/20 -50	75	M	04/08/2 0	IC bleed, left thalamic 'hage, DM, HTN, CAD, CVA	NON COVID
11	KKD	SDAC 18/8/20 -62	69	M	07/08/2 0	Myocardial Infarction, DM, HTN	NON-COVID

12	TVM	SDAC 18/8/20-68	62	M	08/08/20	IC-BLEED/subarachnoid hemorrhage, CLD, PHTN	NON COVID
13	KTM	25/8/20-73	23	M	13/08/20	Suicide-Hanging	NON- COVID
14	ALP	25/8/20-74	72	F	16/08/20	Acute MI, DM, HTN	NON- COVID
15	EKM	25/8/20-75	73	M	21/08/20	IC bleed, Large posterior fossa hematoma , DM, HTN, AKI	NON-COVID
16	KLM	25/8/20-76	64	M	13/08/20	Acute SAH, Aneurysmal bleed, Diabetes, HTN, CAD	NON- COVID
17	KLM	11/09/20-11	26	F	21/08/20	Intestinal obstruction, Bilateral hydroureterone phrosis, septic shock, Mass abdomen, Cerebral palsy (developmental delay)	NON- COVID
18	ALP	11/09/20-41	67	M	01/09/20	Road accident, Brain stem death, DM, DM,	NON- COVID

						DM-Nephropathy	
19	KTM	11/09/20-45	72	F	10/08/20	DM	NON- COVID
20	EKM	11/09/20-47	81	F	26/08/20	MODS, Candidemia, septic shock, MODS	NON- COVID

Acknowledgement

The third report in series on death audit is published to give information regarding the deaths occurred during the month of August 2020. The respective Institution Medical Boards have done the clinical assessments and forwarded the details. The State death audit committee for communicable diseases has done a detailed study of the cases. They have put in a huge effort to discuss each and every case and submitted their report. We appreciate the works done by the Committee.

It is our effort to understand the reasons for death of a patient so as to plan patient care management properly.

We look forward to the suggestions from all.

Kerala Health

Department of Health & Family Welfare
Government of Kerala
Annexe II Secretariat
Thrivuantharpuram
Kerala