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About 4% of deaths in March and April 2020 due to COVID-19

Vienna, 2020-07-09 – 588 people died of COVID-19 in Austria in the two months of March and April 2020, according to Statistics Austria. With the start of the COVID-19 crisis in mid-March, mortality in Austria rose noticeably. At the peak of the COVID-19 outbreak during the first half of April 2020, the number of deaths was about 16% higher than the average for the years 2015 to 2019. After that, mortality largely returned to the level of previous years. Overall, in March and April 2020 mortality was only 1% higher than in the years before. Most of the people affected were older people with comorbidities such as high blood pressure, diabetes, heart disease or kidney disease. Men died almost twice as often as women due to COVID-19 based on age-standardised rates.

Highest number of deaths in first half of April, followed by significant decrease by the end of April

Between 1 March and 30 April 2020, some 15 107 people died in Austria. For 588 deaths, COVID-19 was the underlying cause of death, accounting for 3.9% of all deaths in this period (see table). Thus, the number of deaths due to COVID-19 in the reference period almost completely corresponds to the Federal Epidemiological Reporting System (596 deaths as of 23.6.2020).

The overall mortality rate (adjusted for different numbers of older people in the population) in March/April 2020 had a value of 167.1 per 100 000 people. It thus it was slightly higher than in 2019 (with a value of 162.4 per 100 000 people), but still lower than in 2015 and 2018 (with values of 177.0 and 170.2 per 100 000 people).

Mortality from COVID-19 higher than from chronic respiratory diseases or diabetes

Mortality due to COVID-19 (6.5 per 100 000 people) in March/April 2020 was higher than mortality due to chronic respiratory diseases or diabetes. For all other frequent causes of death, mortality was within the expected range (which is, however, usually greater for small numbers of cases and short periods). The largest positive deviation from the 5-year average for March/April (2015 to 2019) was seen for dementia with almost one third, although mortality for this disease was higher in 2018 than in the current year. Mortality due to kidney disease was also around 11% higher than the 5-year-average, yet remained below the figures for 2015 and 2018. The largest negative deviation in mortality was observed for suicides (-27.3%) and myocardial infarction (-19.0%).

COVID-19 mortality higher among men

COVID-19 deaths affected men (55.1%) more often than women; COVID-19 mortality was almost twice as high among men (9.1 per 100 000 men vs. 4.7 per 100 000 women). Deaths due to COVID-19 occurred mainly at an advanced age; 94% of those affected were over the age of 65. The vast majority of COVID-19 deaths occurred in a hospital (about 86%); overall, the proportion of hospital deaths was much lower (at about 46%).

On a regional level, COVID-19 mortality in March/April 2020 was highest by far in Tyrol (13.9 per 100 000 people), followed by Styria and Vienna (9.2 and 9.1 per 100 000 people respectively). The lowest mortality was observed in Carinthia and Burgenland (2.0 per 100 000 people each).

Comorbidity of COVID-19 deceased persons: especially hypertension, kidney diseases and diabetes

Decedents due to COVID-19 had slightly more additional illnesses (on average 4.8 on the death certificate) than those without COVID-19 (4.5). The most frequent comorbidity of COVID-19 deaths aged 65 and more was hypertension. One fifth also had kidney disease and/or diabetes and/or

ischaemic heart disease. In 17% of COVID-19 deaths, dementia was also noted on the death certificate, a little over 10% had chronic respiratory disease and a little less than 10% had cancer. Other frequent indications were cerebrovascular diseases and pulmonary embolisms.

Information on methodology, definitions: This analysis takes into account all deaths occurring in Austria between 1 March and 30 April 2020 that were registered by the civil registries (by 23 June 2020). All data for 2019 and 2020 are preliminary data, including medical information and its coding. For the period under consideration, the medical information is missing only for 175 deaths (1.2% of all deaths).

The **legal basis** for determining the cause of death is the "Personenstandsgesetz 2013" (PStG 2013: Federal Law No. 16/2013; § 28 para. 1). Accordingly, Statistics Austria has to receive and process information on the cause of death. Causes of death statistics are based on **death certificates**, with a structure according to the World Health Organisation. The death certificate is filled in by a medical examiner, pathologist or forensic pathologist. On the death certificate is indicated the causal chain of illnesses that ultimately led to death. From these, the disease that triggered the death process (the **underlying cause**) is selected and coded according to international guidelines (the International Classification of Causes of Diseases – ICD-10). An example would be a COVID-19 disease with the sequelae pneumonia or viral myocarditis. In addition, the physician can also specify **accompanying diseases** that contributed to the death process. Examples would be diabetes or high blood pressure. Death certificates are sent to the civil registries for certifying the death. Certified cases are forwarded to Statistics Austria, where they are pre-sorted, entered, coded and evaluated. Extensive pathophysiological knowledge is necessary for the coding of the deaths.

Since only **diagnoses** and no laboratory results are indicated on the death certificate, data of the cause of death statistics were enriched with the results from the Epidemiological Reporting System (EMS) of the Federal Ministry of Social Affairs, Health, Care and Consumer Protection. For the majority of cases, the medical information was consistent. Cases for which no information on laboratory evidence and disease or death caused by SARS-CoV-2 was available in the cause of death statistics at the time of data transmission (e.g. due to a delay in reporting or pending cause of death coding), but who – according to EMS – had died of COVID-19, were assigned the ICD-Code U07.1 (COVID-19, virus identified).

Not every confirmed COVID-19 case may be coded in the cause of death statistics with underlying disease COVID-19. For example, for advanced metastatic cancer, COVID-19 is classified as a disease that accelerates the death process (comorbidity). This means, that despite a laboratory confirmation from the EMS, COVID-19 may not have been coded as underlying cause. COVID-19 deaths analysed here refer only to cases with underlying disease COVID-19. A further 41 cases with COVID-19 as comorbidity were identified. Yet, these were not included, since comorbidity has only been recorded for the reference period, but not for comparative periods. Another difference to the EMS is that cause of death statistics also includes **cases without positive laboratory results**. However, these must show clear clinical symptoms and have to be epidemiologically confirmed (for coding details see www.dimdi.de). Yet, an epidemiological confirmation is rarely stated on the death certificate and normally this information may only be determined via the EMS (two cases for the reference period).

Cause of death statistics is published by the **place of residence of decedents**, which may also result in differences to the EMS. Data there is published according to the place of the responsible regional administrative authority; yet, the authority's responsibility is based on the actual place of stay of the infected person; this characteristic can therefore change several times during case processing (for example, due to admission or transfer to a hospital).

The total number of deaths in a year depends on the **size and age structure of the population**. **Mortality** is usually described using **age-standardised death rates**. The standardised death rate indicates how many deaths would have occurred per 100 000 living persons due to the prevailing mortality conditions if the age structure of the population in the relevant reporting period (here at the beginning of the year, provisional figures in 2020) had corresponded to that of a standard population. This eliminates the disturbing influence of the respective age structure, i.e. this measure takes into account both the overall growing population and its continuous ageing, thus making different death conditions comparable over time. The **standard population** used is the standard population 2013 published by Eurostat, which is an "artificial population" with an estimated age structure for the European population used as a basis for calculating comparable age-standardised death rates.

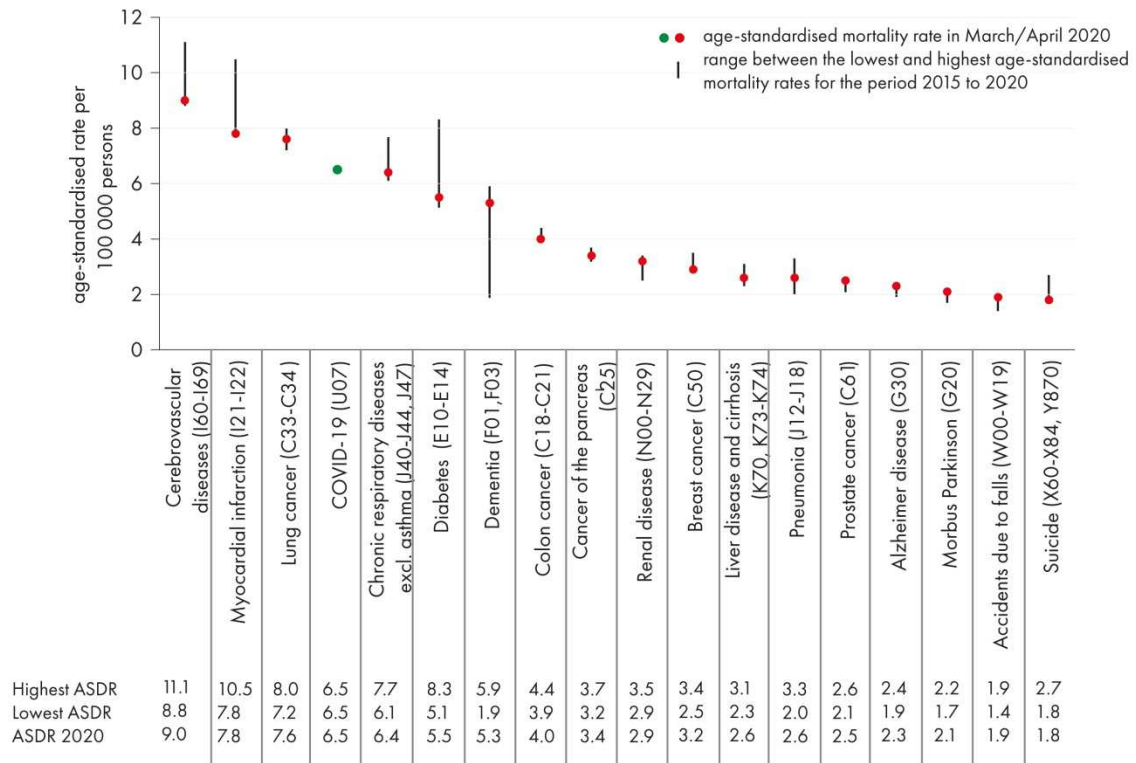
Table: Sociodemographic characteristics of persons died due to COVID-19, March/April 2020

Sociodemographic characteristics	Persons died due to COVID-19						All deaths in March/April 2020		
	Total		Men		Women		Absolute	In %	COVID-19 Deaths in % of all deaths
	Absolute	In %	Absolute	In %	Absolute	In %			
Total	588	100,0	324	100,0	264	100,0	15.107	100,0	3,9
Age groups									
under 60	20	3,4	13	4,0	7	2,7	1.472	9,7	1,4
60 to 64	14	2,4	13	4,0	1	0,4	725	4,8	1,9
65 to 69	37	6,3	27	8,3	10	3,8	860	5,7	4,3
70 to 74	61	10,4	39	12,0	22	8,3	1.379	9,1	4,4
75 to 79	92	15,6	56	17,3	36	13,6	2.047	13,6	4,5
80 and older	364	61,9	176	54,3	188	71,2	8.624	57,1	4,2
Federal state of residence									
Burgenland	7	1,2	6	1,9	1	0,4	642	4,2	1,1
Carinthia	13	2,2	9	2,8	4	1,5	1.084	7,2	1,2
Lower Austria	88	15,0	51	15,7	37	14,0	3.135	20,8	2,8
Upper Austria	47	8,0	29	9,0	18	6,8	2.318	15,3	2,0
Salzburg	33	5,6	18	5,6	15	5,7	829	5,5	4,0
Styria	129	21,9	60	18,5	69	26,1	2.399	15,9	5,4
Tyrol	103	17,5	55	17,0	48	18,2	1.184	7,8	8,7
Vorarlberg	18	3,1	8	2,5	10	3,8	542	3,6	3,3
Vienna	150	25,5	88	27,2	62	23,5	2.974	19,7	5,0
Residence type									
Main residence in a retirement home, nursing home, etc.	214	36,4	76	23,5	138	52,3	3.922	26,0	5,5
Main residence outside a home	374	63,6	248	76,5	126	47,7	11.185	74,0	3,3
Place of death									
Hospital	505	85,9	288	88,9	217	82,2	7.004	46,4	7,2
Home	64	10,9	24	7,4	40	15,2	3.441	22,8	1,9
Other	19	3,2	12	3,7	7	2,7	4.662	30,9	0,4

Q: STATISTIK AUSTRIA, causes of death statistics as of 23.6.2020, provisional data.

Graphic1:

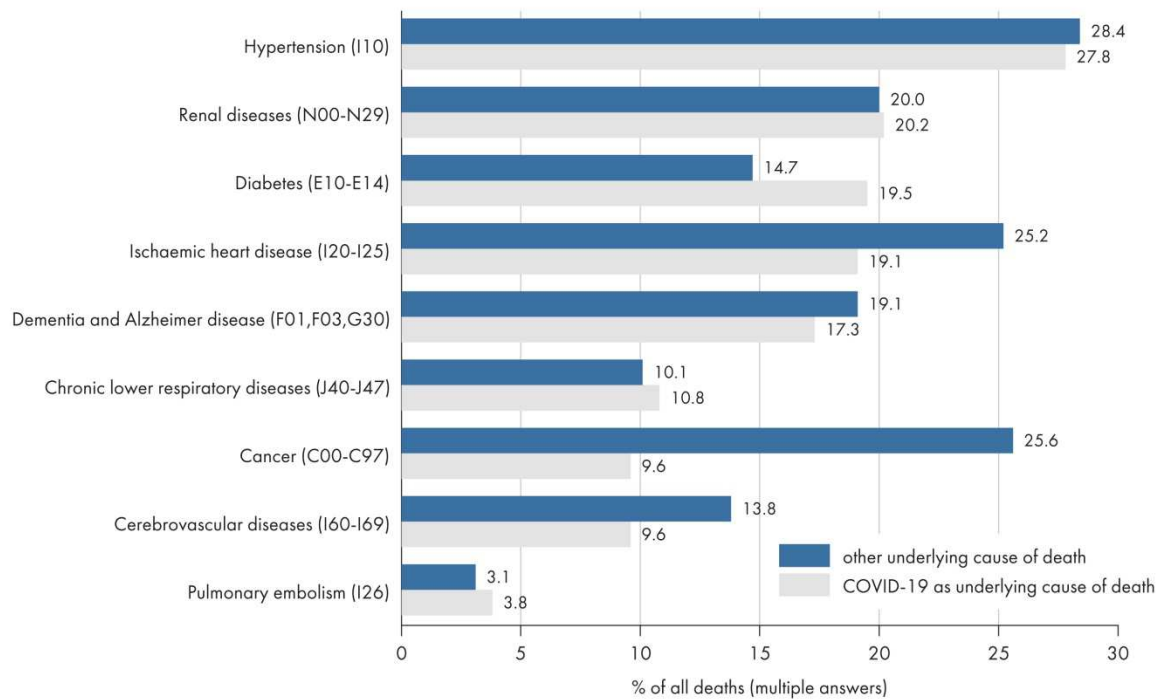
Age-standardised death rates (ASDR) in the months March/April of the period 2015 bis 2020* according to selected causes of death or groups of causes of death



S: STATISTICS AUSTRIA, causes of death statistics as of 23.6.2020. – *) provisional data. – Comparison periods March/April of the years 2015 to 2019. – Selected frequent cause of death groups, grouping according to Eurostat list, simplified ICD text. – A more detailed description of the medical data on the death certificate and their coding can be found in the methodological information. Reading example: The age-standardised death rate of diabetes in March/April 2020 was at the lower end of the range between the lowest and highest observed value of March/April of the previous five years.

Graphic 2:

Comorbidity of deaths from 65 years of age and older: Deaths with or without COVID-19 as underlying cause also had ...



S: STATISTICS AUSTRIA, Causes of Death statistics as of 23.6.2020, provisional data. - ICD-codes that occur several times within a Cause of Death group are counted once. - Simplified ICD text.

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