4 COVID-19 concerns, exposure, symptomology and mortality

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Contents

tilda

Staidéar Fadaimseartha na
hÉireann um Dhul in Aois

The Irish Longitudinal
Study on Ageing

4 COVID-19 concerns, exposure, symptomology and mortality

Key Findings

- The combined prevalence of a positive PCR test, doctor-suspected cases and self-suspected cases of COVID-19 infection among adults aged 60 and over is 5%.

- The prevalence of a confirmed or suspected case of COVID-19 infection is three-times higher in the 60-69 compared to the 70 and over age group (6% versus 2%). The same prevalence rates by age group are observed among those who live alone.

- The prevalence of a confirmed or suspected case of COVID-19 infection is 70% higher in males versus females.

- The highest prevalence of confirmed or suspected cases of COVID-19 infection is among those with a third level education (6%) compared to those with secondary (4%) or primary level (5%). Non-response to the question is 11%, 5% and 3% among primary, secondary and third level educated participants respectively.

- The prevalence of a confirmed or suspected case of COVID-19 infection is almost twice as high in Dublin (7%) compared to other cities (4%) and towns or rural areas (4%).

- The older adults most concerned about the COVID-19 pandemic are aged 70 and over and live alone (54%), are female (52%), are educated to primary level (56%), and live in rural areas (51%).

- The prevalence of COVID-19 infection by relationship to older adults is low but is highest among friends and neighbours (0.8%), followed by children (0.7%) and spouses or partners (0.6%), relatives and siblings (0.3%), and grandchildren and parents (0.2%).

- The most prevalent symptoms reported by older adults during the COVID-19 pandemic are: muscle and joint pain (17%), cough (9%), shortness of breath (6%), sore throat (5%), diarrhoea (4%), fever (2%), loss of smell or taste (2%), nausea or vomiting (1%).

- Since the start of the pandemic, 1 in 20 (5%) adults aged 60 and over have lost a family member or friend due to COVID-19 infection.

- Of those adults who lost a family member or friend due to COVID-19, almost two-thirds were neighbours or friends, 30% were relatives and 5% were a close family member.

- Among adults who lost someone close due to COVID-19 the majority are: aged 60-69 years (55%), live alone aged 70 and over (56%), female (55%), third level educated (44%) and live in Dublin (50%).

4.1 Introduction

The ongoing pandemic of SARS-CoV-2, a novel coronavirus that causes COVID-19 infection and disease, is threatening healthcare systems globally as well as in Ireland. (1) The COVID-19 pandemic, and public health-associated restrictions, is having a significant impact on the physical, mental, social and economic health and wellbeing of our citizens. No age group is as greatly affected as the older members of our society, with adults aged 65 and over having a 6-8 times increased risk of hospitalisation, and 80% of deaths due to COVID-19 reported among this age group also. (2,3) Older people are at high risk because of age related deficiencies in immune response, the presence of long-term health conditions, problems with mobility, as well as loneliness and social isolation. (4-6) From the recently published TILDA report, The Older Population of Ireland on the Eve of the COVID-19 Pandemic, we know that three-quarters of community-dwelling older adults in Ireland have ≥2 chronic conditions and one-in-six are living with frailty. (7)

An earlier chapter (Chapter 2) provides a detailed description of the methodology. Thus, a summary of the methodology used in this chapter is provided here. We use attrition weights as described in the Methodology Chapter to make estimates relevant to the general population aged 60 years and over in Ireland. There are five sections in our analysis. Firstly, we examine general concerns about the COVID-19 pandemic and distribution by sociodemographic factors (age, gender, educational attainment, locality and living alone). Next, we focus on the prevalence of exposure to infection leading to COVID-19 by sociodemographic factors and we report on hospitalisation and requirement for oxygen due to COVID-19. In addition, we ask about infection exposure among members of the household and close contacts. We also investigate the prevalence of COVID-19-related symptoms among TILDA participants themselves and among those close to them such as family, relatives, friends and carers. Finally, we report on mortality among family, relatives and friends of TILDA participants. We report on the distribution of all deaths by sociodemographic factors and we also present the breakdown of deaths by relationship to the participant. We provide descriptive data for the population aged 60 years and over and disaggregate by age group (60-69 years or 70 years and over). A detailed description of these topics and the measures used in these analyses is provided at the start of each section.

Data for this chapter come from the COVID-19 Self-Completion Questionnaire (SCQ) completed by TILDA study participants between July and September of 2020. Of the 5,225 participants aged 50 years and older in TILDA at Wave 5, who also participated at Wave 1, 1,410 did not participate in the COVID-19 SCQ, leaving a sample of n=3,815. We remove

from our analysis any participant aged less than 60 years of age (n=136) and those participants with missing data for gender (n=10), educational attainment (n=66) and locality (n=1). Thus, the analytical sample includes n=3,602 participants aged 60 years and older. The average age was 71 years, with an age range of 60–98 years.

4.2   Concern about the COVID-19 pandemic

Given the potential harm both to health and to the economy, and the general sense of uncertainty in relation to the predicted course of the pandemic, we want to gauge the general sense of concern among the older adult population in Ireland. We ask TILDA participants 'Overall, on a scale from 1 to 10 how concerned are you about the COVID-19 pandemic?'. They provide responses on a scale of 1-10, with 1 indicating 'Least concerned' and a score of 10 indicting 'Most concerned'. Below we present the distribution of this score by age, gender, education, locality and living alone.

### 4.2.1   COVID-19 concerns by age and gender

Figure 4.1. Concerns about COVID-19 pandemic by age
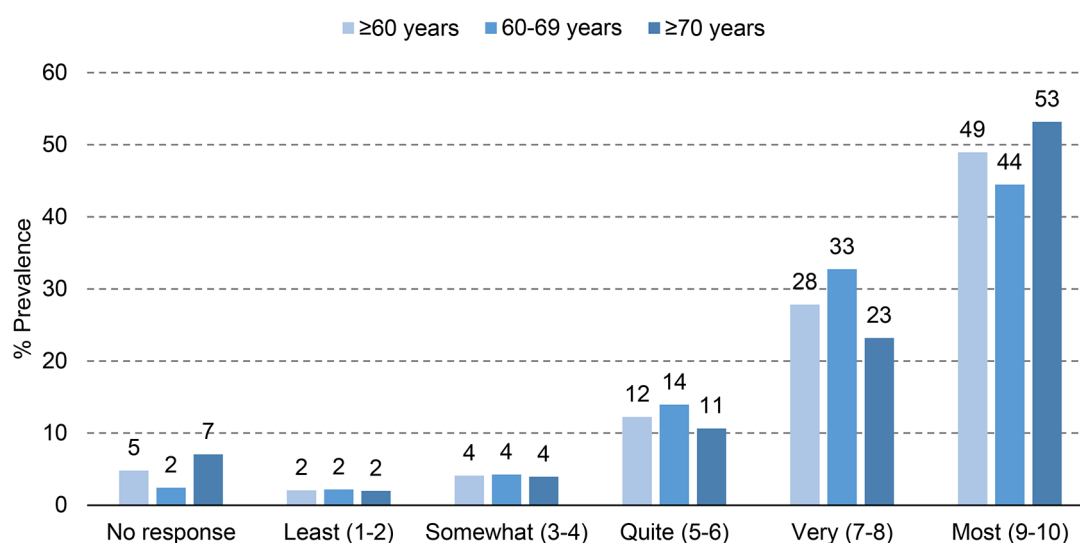
Among the 3,602 TILDA participants in this study aged 60 years and over, 49% are in the 60-69 age group and 51% are aged 70 years and over. Figure 4.1 shows the distribution of scores indicating concern about the COVID-19 pandemic by age group. Overall, the majority show higher levels of concern across all age groups, with only 6% rating concern at scores of 1-4 indicating least or somewhat concerned. In the 60-69 age group, 47% choose scores between 5-8, indicating quite or very concerned, compared to those in

the 70 and over age group at 33%. A higher percentage of adults in the 70 and over age group, however, choose the highest scores of 9-10, indicating most concern about the COVID-19 pandemic (53% compared to 44% for the younger age group).

*Figure 4.2. Concerns about COVID-19 pandemic by gender*
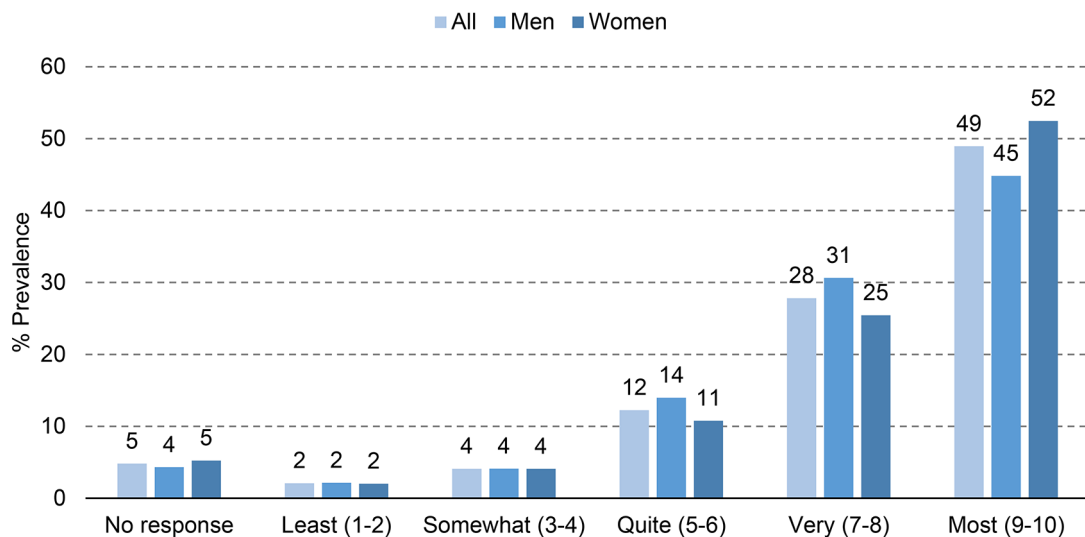
Among the TILDA participants in this study aged 60 years and over, 54% are women. Figure 4.2 shows the distribution of scores indicating concern about the COVID-19 pandemic by gender. Overall, a minority of both men and women show lower levels of concern, with 6% of both genders rating concern at scores of 1-4 (least or somewhat concerned). A higher percentage of men compared to women choose scores between 5-8 indicating quite or very concerned, 45% versus 36% respectively. Conversely, a higher percentage of women compared to men choose the highest scores of 9-10, indicating most concern about the COVID-19 pandemic (52% versus 45% respectively).

4.2.2 COVID-19 concerns by educational attainment

Among the TILDA participants in this study aged 60 years and over, 38%, 43% and 19% attained a primary, secondary or third level education respectively. Figure 4.3 shows the distribution of scores indicating concern about the COVID-19 pandemic by educational attainment. The majority show higher levels of concern, regardless of education level, with only 4-8% rating concern at scores of 1-4 (least or somewhat concerned). A higher percentage of participants with third level education (52%) compared to secondary (45%) or primary level (28%) chooses scores between 5-8, indicating quite or very concerned. Conversely, a higher percentage of older adults with primary level education (56%) choose

the highest scores of 9-10, indicating most concern about the COVID-19 pandemic, compared to older adults with secondary (47%) or third level (40%) education. We note non-response rates are significantly higher among those with a primary level of education.

Figure 4.3. Concerns about COVID-19 pandemic by educational attainment
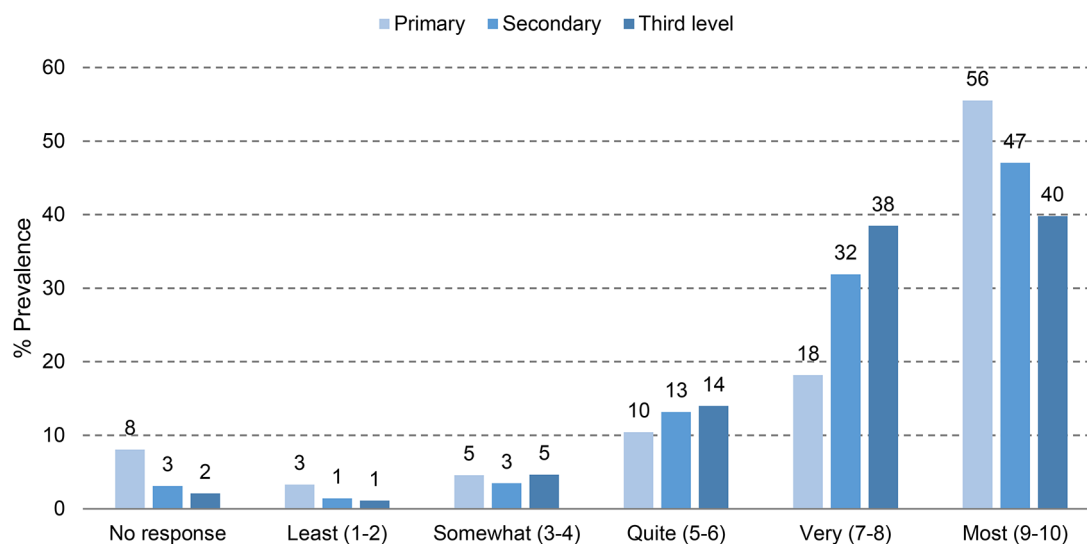
4.2.3 COVID-19 concerns by locality

The percentage of community-dwelling adults aged 60 and over living in Dublin city or county, another city or town and in rural areas is 27%, 32% and 41% respectively. Figure 4.4 shows the distribution of scores indicating concern about the COVID-19 pandemic by locality. The majority show higher levels of concern regardless of locality, with only 5-7% rating concern at scores of 1-4 (least or somewhat concerned). A higher percentage of participants living in Dublin (44%) compared to another city or town (40%) or a rural area (38%) chooses scores between 5-8, indicating quite or very concerned. Conversely, a higher percentage of older adults living in a rural area (51%) chooses the highest scores of 9-10, indicating most concern about the COVID-19 pandemic, followed by older adults living in another city or town (49%) or those living in Dublin (46%).

Figure 4.4. Concerns about COVID-19 pandemic by locality
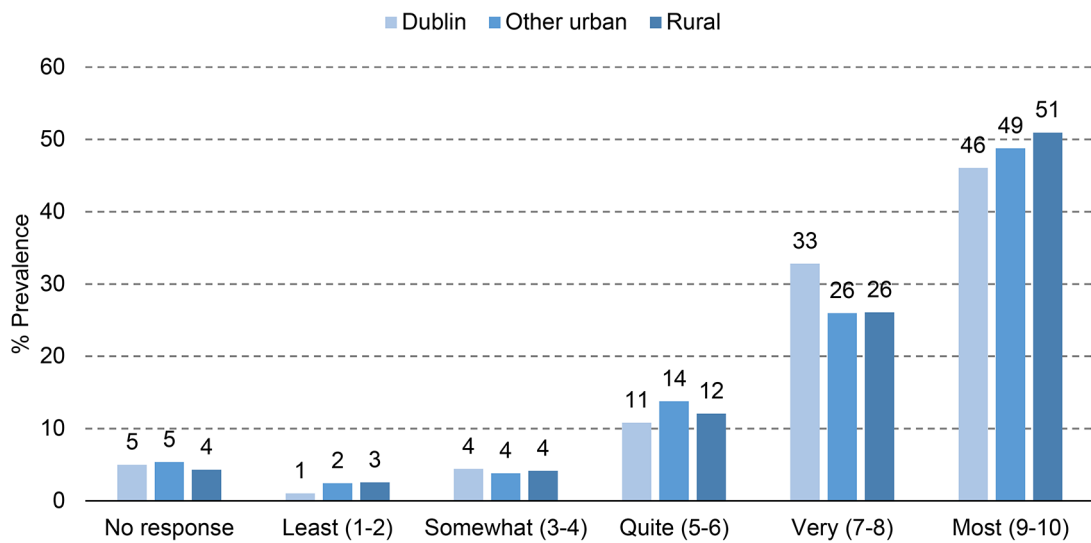
4.2.4 COVID-19 concerns and living alone

The percentage of community-dwelling adults living alone and aged 60 and over, 60-69 years, and 70 and over is 29%, 23% and 35% respectively. Figure 4.5 shows the distribution of scores indicating concern about the COVID-19 pandemic for older adult living alone by age. The majority of older adults living alone show higher levels of concern regardless of age, with only 7-9% rating concern at scores of 1-4 (least or somewhat concerned). A higher percentage of participants living alone in the 60-69 age group (41%) compared to those living alone in the 70 and over age group (29%) chooses scores between 5-8, indicating quite or very concerned. A higher percentage of older adults living alone aged 70 and over (54%), however, chooses the highest scores of 9-10, indicating most concern about the COVID-19 pandemic, compared to those living alone aged 60-69 years (45%).

Figure 4.5. Concerns about COVID-19 pandemic and living alone
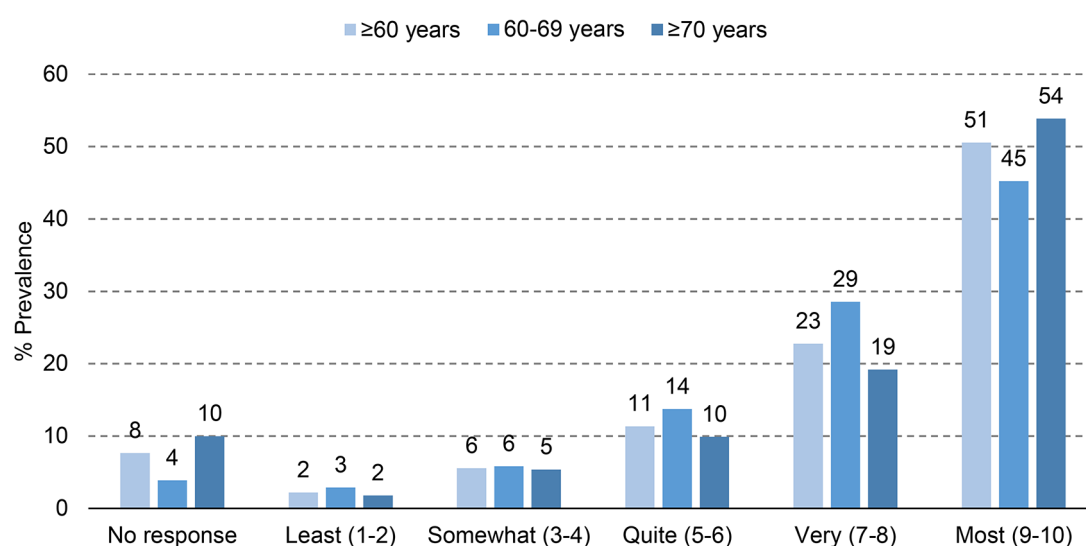
4.3   COVID-19 exposure, hospitalisation, and oxygen support

In this section we report on the prevalence of exposure of older community-dwelling adults in Ireland to SARS-CoV-2 infection. We ask TILDA participants if they think they have had COVID-19. They provide responses of 'Yes, confirmed by a positive test', 'Yes, suspected by a doctor', 'Yes, my own suspicions', 'No, confirmed by a negative test' or 'No, not to my knowledge'. We present the incidence of confirmed or suspected COVID-19 by age, gender, education, locality and living alone. We also report on admission to hospital, hospital length of stay and whether oxygen was required to help with breathing while in hospital.

4.3.1   COVID-19 exposure by age and gender

Figure 4.6 shows the prevalence of exposure to COVID-19 by age. The rates of older adults who report a positive test for COVID-19 (n=13, 0.2%), a doctor-suspected case of COVID-19 (n=18, 0.5%) or a self-suspected case of COVID-19 (n=123, 3.5%) are very low. A further 6% report a negative test for COVID-19, while the majority (83%) did not have COVID-19 to their knowledge. There was a higher prevalence among those aged 60-69 compared to those 70 and over of both doctor-suspected (1.0% versus 0.1%) and self-suspected (5% versus 2%) cases of COVID-19.
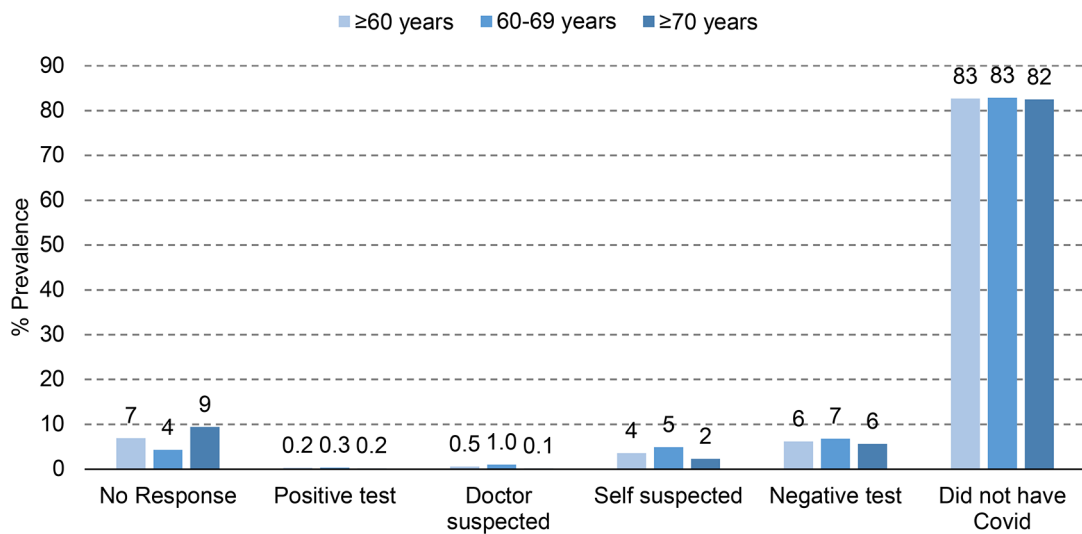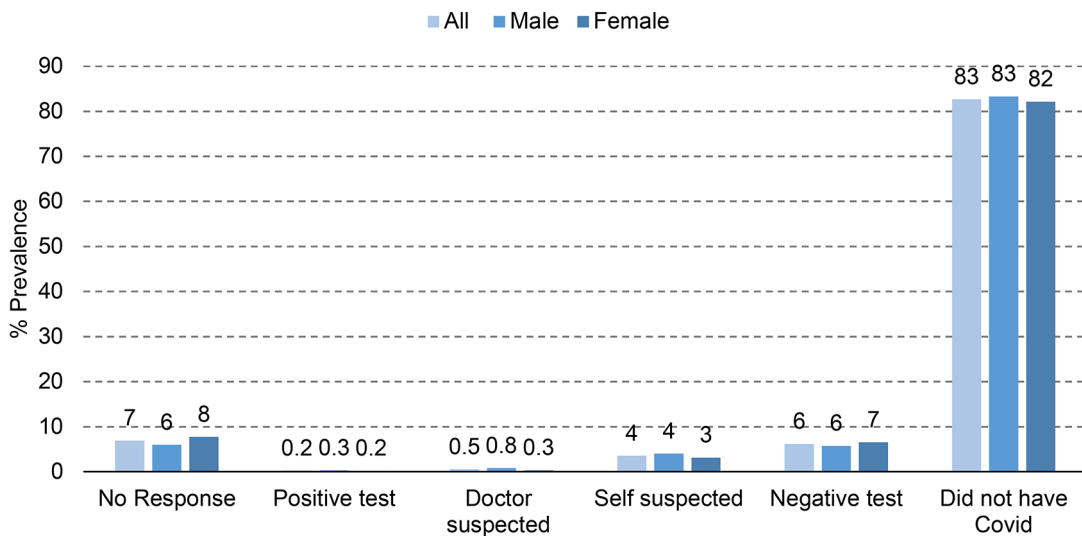
Figure 4.6. COVID-19 exposure by age

Figure 4.7 shows the prevalence of exposure to COVID-19 by gender. There is a higher prevalence of doctor-suspected (0.8% versus 0.3%) and self-suspected (4% versus 3%) cases of COVID-19 among men versus women. The percentages of men and women who had a negative test or who did not believe they had COVID-19 are similar.
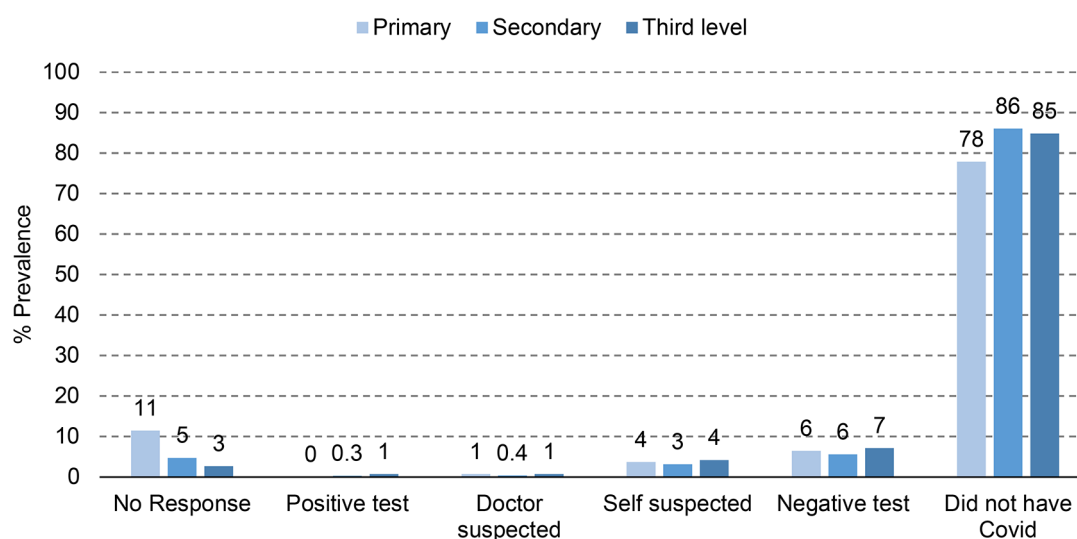

Figure 4.7. COVID-19 exposure by gender

4.3.2 COVID-19 exposure by educational attainment

Figure 4.8 shows the prevalence of exposure to COVID-19 by educational attainment. There is a progressively higher prevalence of positive tests among older adults with third level compared to secondary or primary level education, but the numbers are very small (1.0, 0.3 and 0.0% respectively). Doctor-suspected and self-suspected cases of COVID-19 are marginally higher among adults with primary and third level compared to second level education. Older adults reporting negative tests for COVID-19 infection are similar for all levels of education. Those with a primary level education have higher non-response rates and a lower percentage reporting not having COVID-19 compared to those with secondary or third level educational.

Figure 4.8. COVID-19 exposure by educational attainment

4.3.3 COVID-19 exposure by locality

Figure 4.9 shows the prevalence of exposure to COVID-19 by locality. There is a higher prevalence of positive tests and self-suspected cases of COVID-19 among older adults living in Dublin, while the prevalence of doctor-suspected cases is similar among older adults living in Dublin and other cities and towns. Older adults reporting negative tests for COVID-19 infection are similar for all localities at 5-7%. Older adults living in Dublin report a lower percentage who did not believe they had COVID-19 compared to those living in other towns and cities and those living in rural areas.

Figure 4.9. COVID-19 exposure by locality
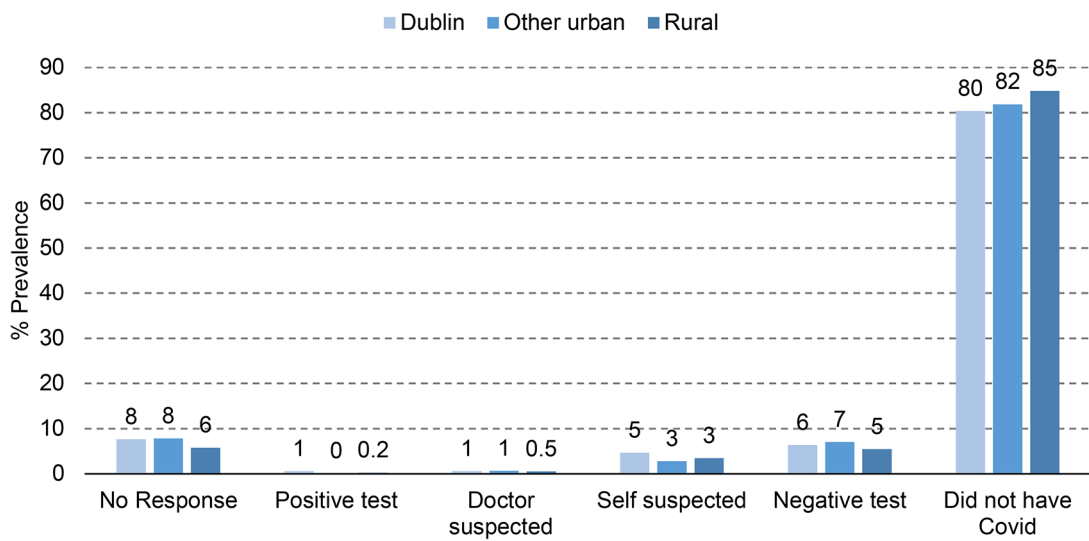
4.3.4 COVID-19 exposure and living alone

Figure 4.10 shows the prevalence of exposure to COVID-19 among older adults living alone in the community by age. There is a higher prevalence of doctor-suspected and self-suspected cases of COVID-19 among adults living alone in the younger 60-69 age group compared to the 70 and over age group. The prevalence of negative tests for COVID-19 is also higher in the younger age group. There is no difference in the prevalence of positive tests for COVID-19 between the younger and older age groups of adults living alone.

Figure 4.10. COVID-19 exposure and living alone
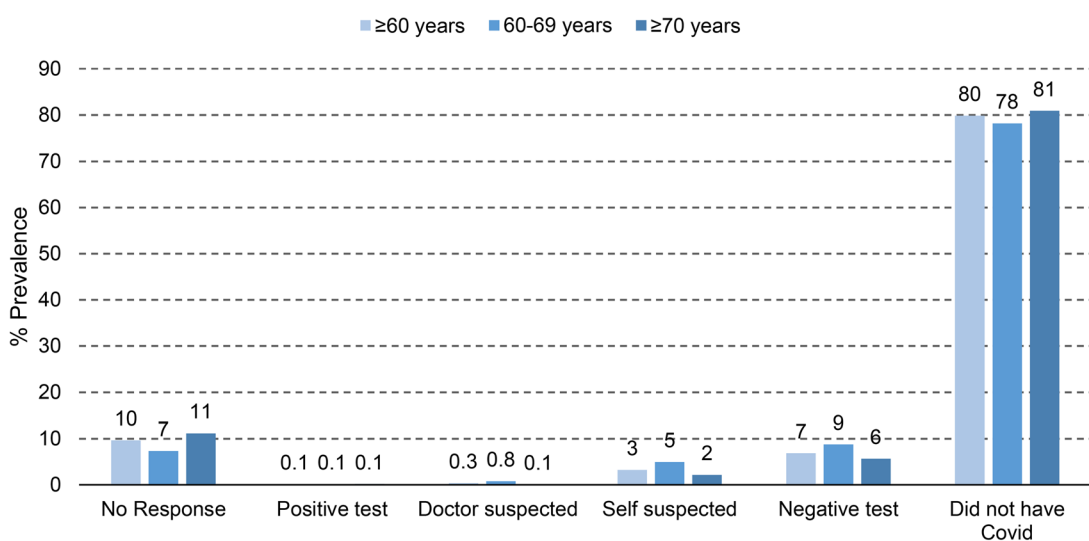
4.3.5 COVID-19 exposure and hospitalisation

Of the thirteen individuals who report having a positive test for COVID-19, three (23%) were admitted to hospital, with length of hospital stay ranging from 6 to 31 nights. Just one of the individuals admitted to hospital was administered oxygen to help them to breathe.

4.4 COVID-19 exposure among household and close contacts

In addition to reporting on whether older adults had contracted COVID-19 themselves, we also want to find out if others living with or close to older adults had been exposed to SARS-CoV-2 infection. We ask TILDA participants 'Has anyone in your household other than you been diagnosed with COVID-19? If yes, what is their relationship to you?'. The response options are: Spouse/partner, sons/daughters, parents, grandchildren, siblings, other relatives, friend/neighbour, and carer. We also ask participants 'Have you been in close contact with anyone with COVID-19?'. The response options to this question are: 'Yes, I was in contact with a confirmed/tested COVID-19 case', 'Yes, I was in contact with a suspected COVID-19 case' and 'No, not to my knowledge'.

4.4.1 COVID-19 exposure among household

Figure 4.11 shows the distribution by relationship of other people with a diagnosis of COVID-19 who live with or are close to older adults. Once again, the prevalence of COVID-19 positive cases within each of the different groups living with or close to older adults is very low, at less than 1%. In the 60 and over age group, the highest percentage of COVID-19 positive cases are among friends and neighbours, followed by children, spouses and partners, siblings, other relatives, grandchildren, and parents. The lowest percentage of COVID-19 cases is among carers of older adults in this age group. A similar pattern is seen for the 60-69 age group, but grandchildren ranked 4th highest above parents, siblings and other relatives by percentage of COVID-19 positive cases. Compared to the pattern for those aged 60-69 years, some notable differences are observed for those aged 70 and over. Firstly, children ranked above friends and neighbours as the group with the highest prevalence of positive COVID-19 cases. Secondly, parents ranked above grandchildren. Finally, carers ranked above both parents and grandchildren by prevalence of COVID-19 cases among adults aged 70 and over.

Figure 4.11. COVID-19 exposure in household
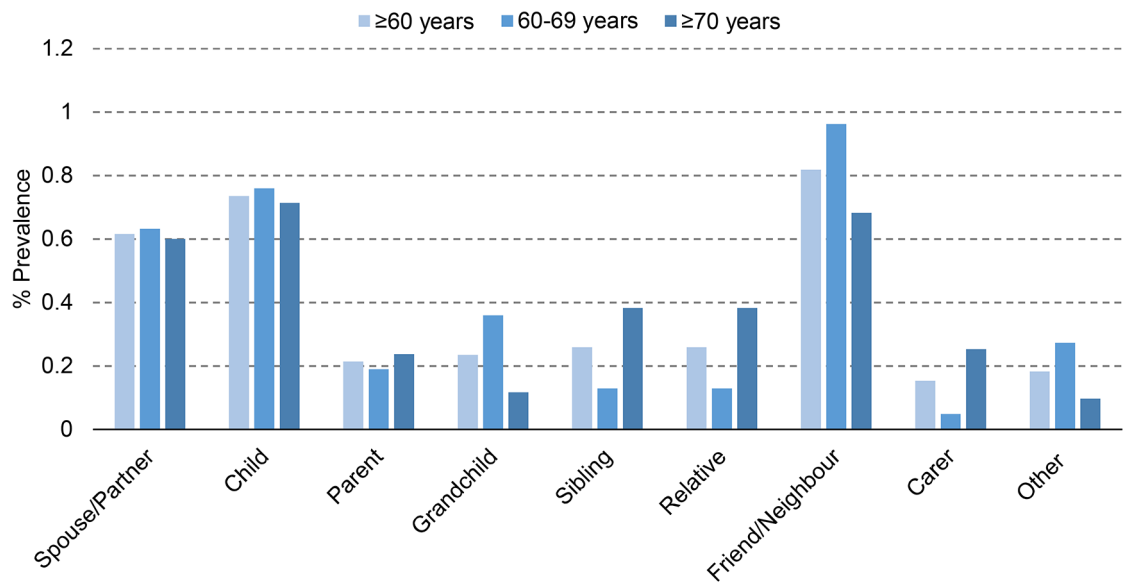
4.4.2 COVID-19 exposure and close contacts

Figure 4.12 shows the percentage of older adults who were close contacts of either a confirmed or suspected case of COVID-19. Among those aged 60 and over, 2% are close contacts of a confirmed case and 1% are close contacts of a suspected case. There are no differences between the 60-69 and 70 and over age groups in relation to close contacts.

*Figure 4.12. COVID-19 exposure and close contacts by age*
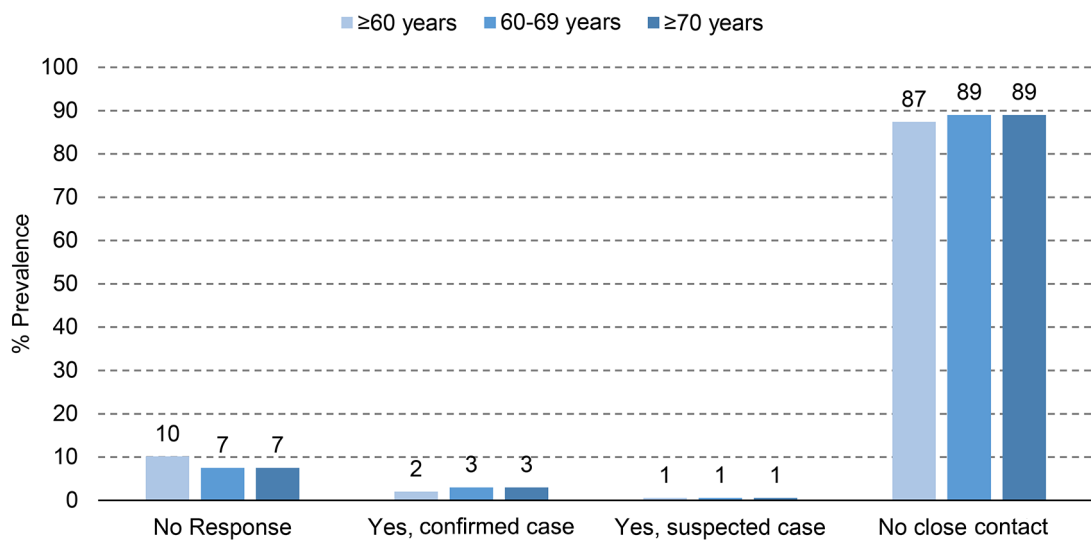
4.5 Symptoms during the COVID-19 pandemic

In this section, we report on the prevalence of symptoms among older community-dwelling adults in Ireland during the COVID-19 pandemic. We ask TILDA participants 'Have you or anyone close to you experienced any of the following symptoms during the COVID-19 pandemic?'. Participants indicate if they themselves or someone close to them has displayed any of the following symptoms: shortness of breath, cough, fever, sore throat, diarrhoea, nausea or vomiting, loss of sense of smell or taste, muscle or joint pain, or none of these symptoms.

4.5.1 Symptoms during COVID-19 pandemic by age

Figure 4.13 shows the prevalence of symptoms in older adults during the COVID-19 pandemic by age group. Among those aged 60 and over, the most common symptoms ranked by prevalence are: muscle or joint pain, cough, shortness of breath, sore throat, diarrhoea, fever, loss of sense of smell or taste, nausea or vomiting. A similar pattern in the prevalence of symptoms is reported for the 60-69 and 70 and over age groups. The majority of older adults across age groups (53-58%) report having none of these symptoms during the COVID-19 pandemic.

*Figure 4.13. Symptoms during COVID-19 pandemic by age*
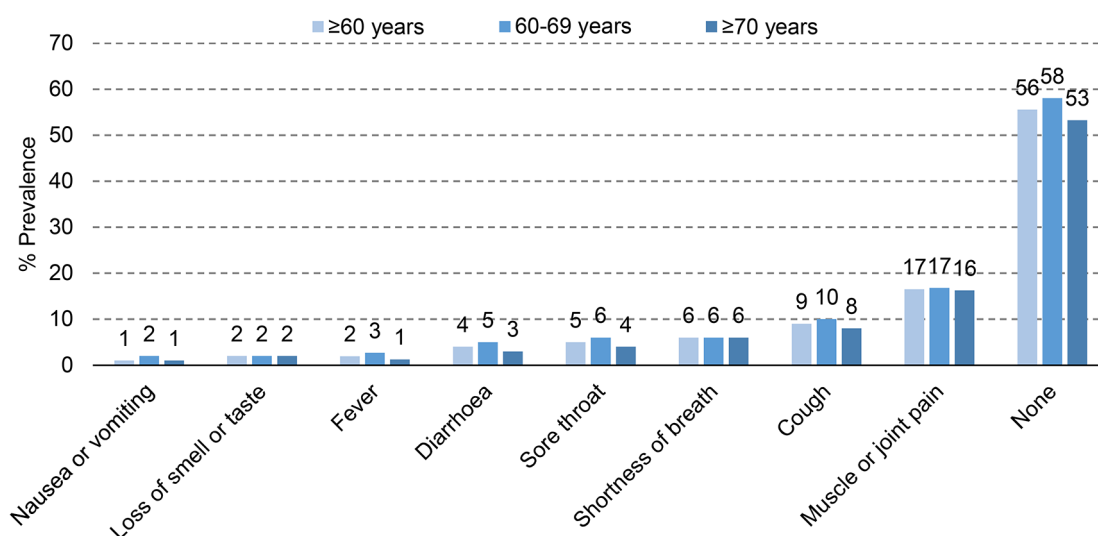
4.5.2 Symptoms among people close to older adults during COVID-19 pandemic

Figure 4.14 shows the prevalence of symptoms among people who are close to older adults during the COVID-19 pandemic. Among those who were close to adults aged 60

and over, the most common symptoms ranked by prevalence are: muscle or joint pain, cough, sore throat, shortness of breath, fever, loss of sense of smell or taste, diarrhoea, nausea or vomiting. The majority of older adults across age groups (43%) report having none of these symptoms during the COVID-19 pandemic.

Figure 4.14. Symptoms among people close to older adults during COVID-19 pandemic
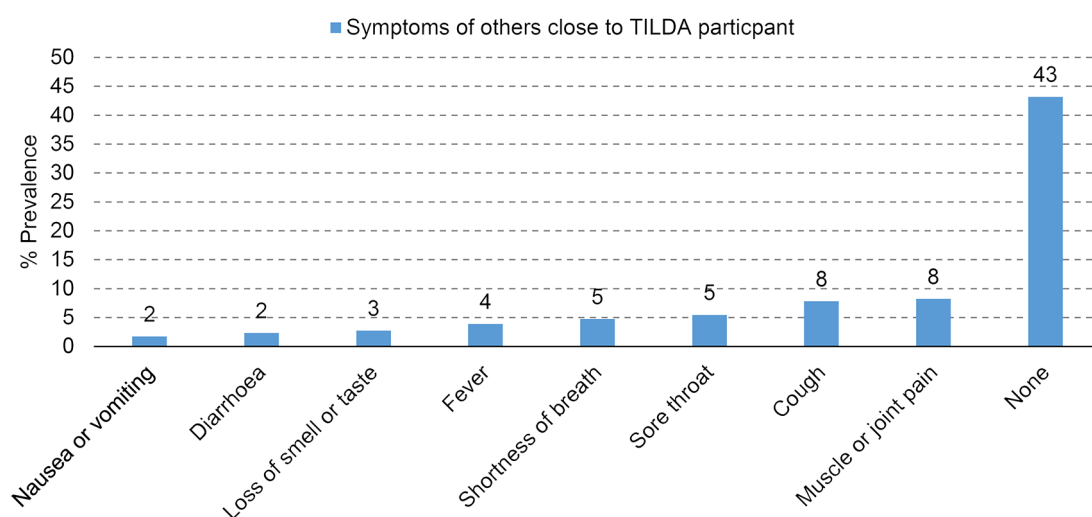
4.6 COVID-19 Mortality

One of the tragic and upsetting consequences of the COVID-19 pandemic has been the loss of loved ones, relatives and friends due to COVID-19. Mortality has been more common among older adults. We asked TILDA participants 'Tragically, many people have already lost loved ones due to COVID-19. Has anyone close to you, such as a friend or family member, died with COVID-19?'. The response options are 'Yes' or 'No'. We then asked participants 'If, sadly, someone you know has died with COVID-19, what was their relationship to you?' The response options were: Spouse/partner, sons/daughters, parents, grandchildren, siblings, other relatives, friend/neighbour, and carer. Below we present the distribution of mortality among family relative and friends by participant age, gender, education, locality and living alone. We also present mortality by relationship to the participant.

4.6.1 Mortality by age and gender

Figure 4.15 shows the prevalence of mortality of a family member or friend among older adults due to COVID-19 by age. Among adults aged 60 and over, 5% or 1 in 20 report the loss of a family member or friend due to COVID-19. The prevalence was 6% in the 60-69

age group and 5% in those aged 70 and over. Correspondingly, 89% and 85% report not having lost a friend or family member due to COVID-19 in the 60-69 and 70 and over age groups. We note that non-response in the older age group was higher than in the younger age group (10% versus 5%).

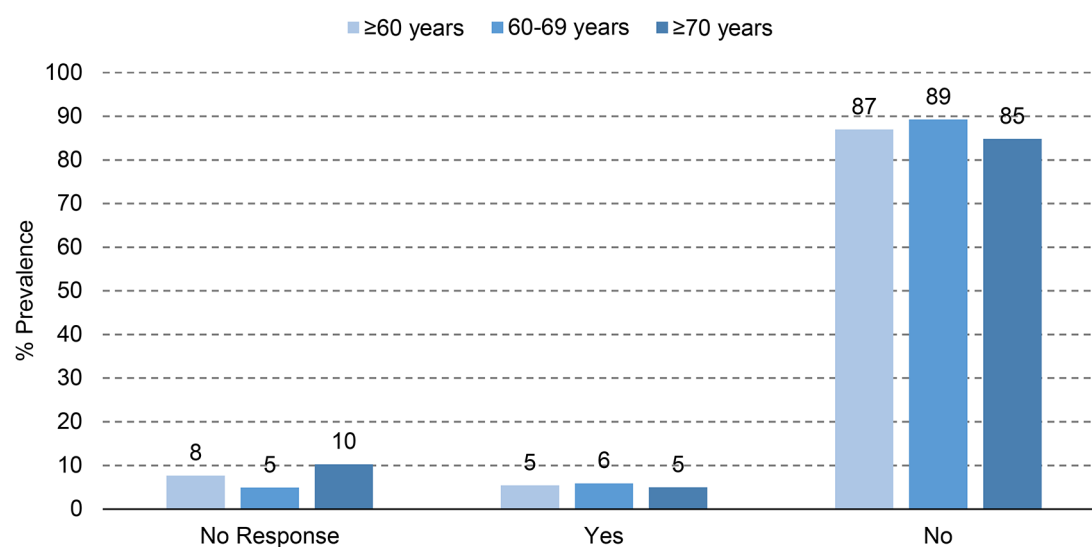*Figure 4.15. COVID-19-related mortality among family and friends by participant age*

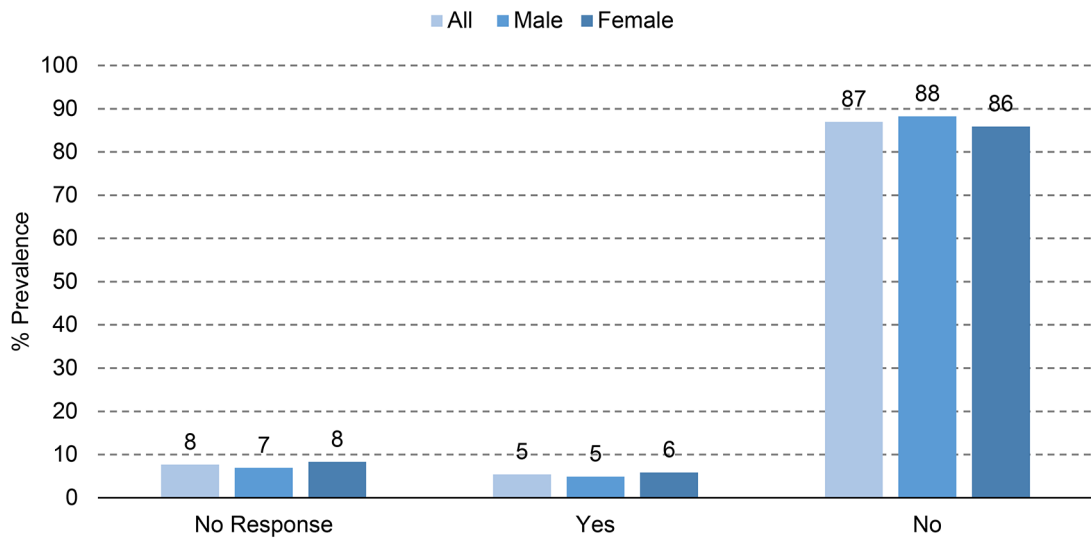Figure 4.16 shows the prevalence of mortality due to COVID-19 of a family member or friend among older adults by gender. Among adults aged 60 and over, 6% of women and 5% of men report the loss of a family member or friend due to COVID-19. Correspondingly, 88% of men and 86% of women report not having lost a friend or family member due to COVID-19. Non-response rates were similar for both genders.
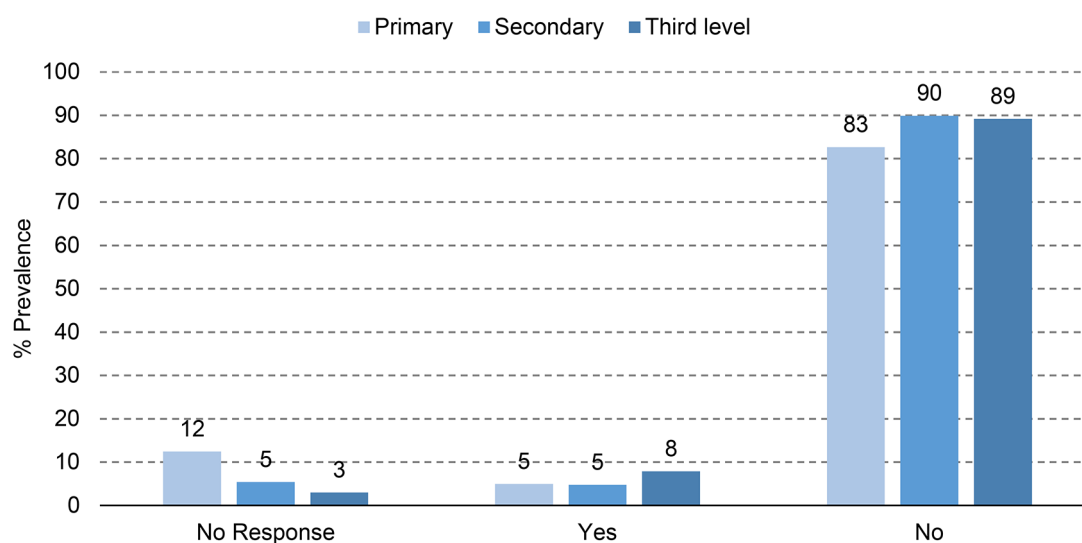
Figure 4.16. COVID-19-related mortality among family and friends by participant gender

4.6.2 Mortality by educational attainment

Figure 4.17 shows the prevalence of mortality due to COVID-19 of a family member or friend among older adults by educational attainment. Among adults aged 60 and over, 8% of third level educated, 5% of secondary educated and 5% of primary educated participants report the loss of a family member or friend due to COVID-19. Conversely, 89% of third level educated, 90% of secondary educated and 83% of primary educated participants report not having lost a friend or family member due to COVID-19. We note the non-response rates among those with primary education were four times higher than those with a third level education and twice as high as with second level.
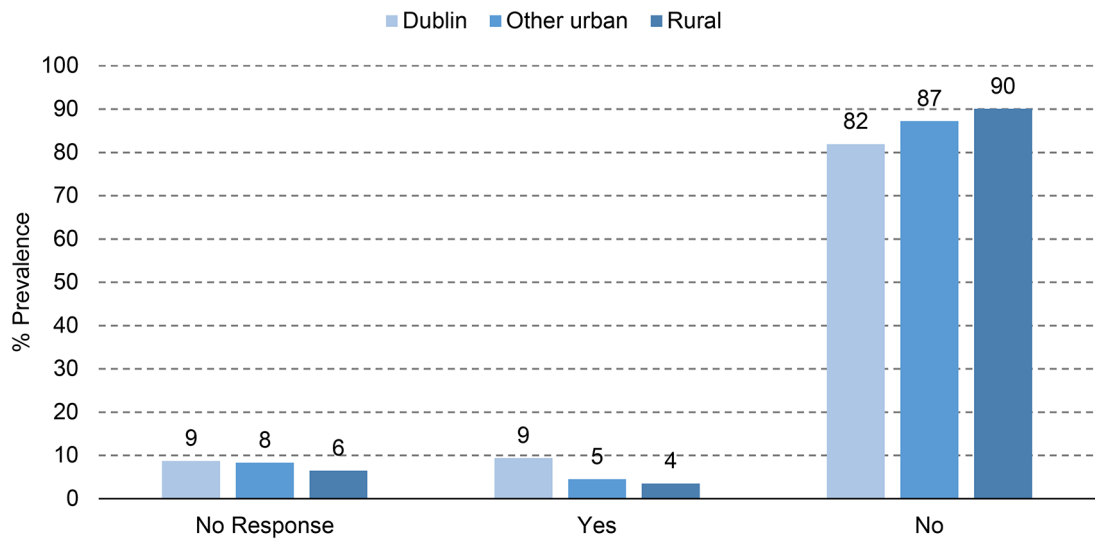
Figure 4.17. COVID-19-related mortality among family and friends by participant educational attainment

4.6.3 Mortality by locality

Figure 4.18 shows the prevalence of mortality due to COVID-19 of a family member or friend among older adults by locality. Among adults aged 60 and over, 9% living in Dublin, 5% living in another city or town and 4% living in rural areas report the loss of a family member or friend due to COViD-19. Conversely, 82% living in Dublin, 87% living in another city or town and 90% living in rural areas report not having lost a friend or family member due to COVID-19. We note the non-response rates were higher among those living in Dublin and other urban areas compared to those living in rural areas.

Figure 4.18. COVID-19-related mortality among family and friends by participant locality

Legend: ■ Dublin ■ Other urban ■ Rural

Y-axis: % Prevalence

No Response: Dublin 9, Other urban 8, Rural 6
Yes: Dublin 9, Other urban 5, Rural 4
No: Dublin 82, Other urban 87, Rural 90

4.6.4 Mortality and living alone

Figure 4.19 shows the prevalence of mortality due to COVID-19 of a family member or friend among older adults who live alone by age. Among adults aged 60 and over who live alone, 5% report the loss of a family member or friend due to COViD-19. The prevalence is similar among those living alone in the younger 60-69 (4%) and 70 and over (5%) age groups. Among those living alone in the 60-69 and 70 and over age groups, 82% and 88% respectively report not having lost a friend or family member due to COVID-19. We note the non-response rates were higher among those living alone in the older age group.

Figure 4.19. COVID-19-related mortality among family and friends by participant age and living alone
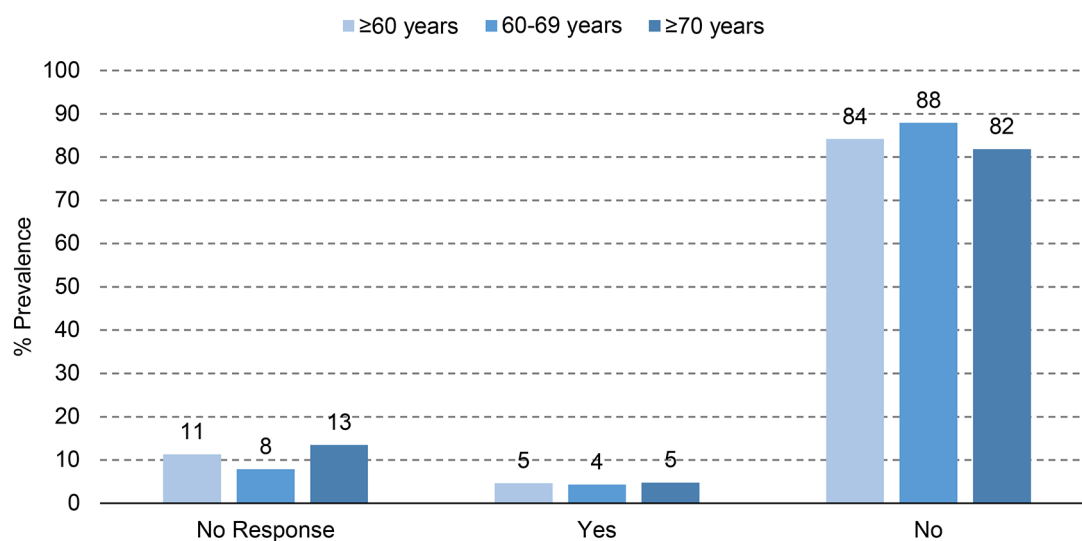
4.6.5 Mortality and relationships

Figure 4.20 shows the distribution by relationship of family and friends of older adults who have died due to COVID-19 infection, by age of the participant. In the 60 and over age group, the highest mortality rate among friends and family was among friends and neighbours, followed by relatives, parents and grandchildren. The pattern was similar among the 60-69 and 70 and older age groups. Very low numbers reported the loss of a parent or grandchild and none reported loss of a spouse/partner, child or carer in any age group.

Figure 4.20. COVID-19-related mortality by relationship to participant
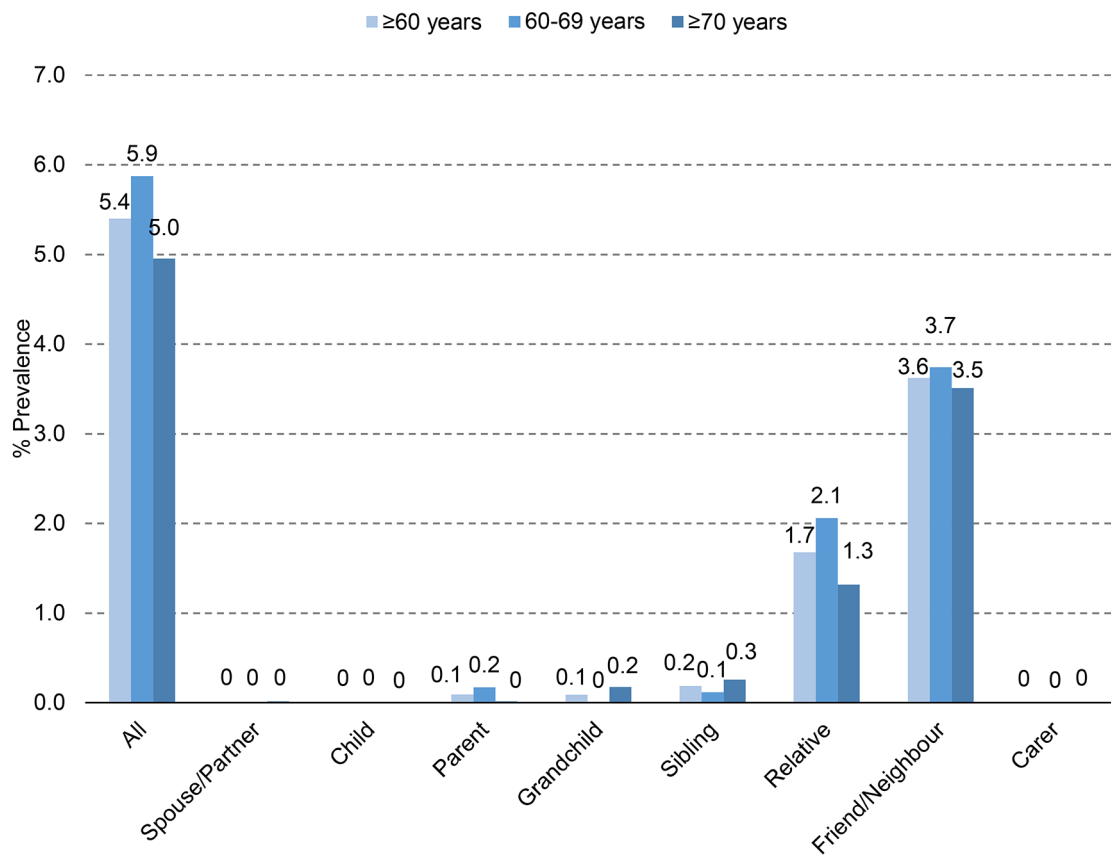
4.7   Conclusion

In this report we show that the combined prevalence of a positive PCR test (0.2%), or doctor-suspected (0.4%) and self-suspected cases (4%) of COVID-19 among adults aged 60 and over is 5%. This compares to 1-2% from HSE and CSO data in this age group who had tested positive by PCR test for the virus by 30 September 2020. (8,9) The real number of individuals infected is however likely to be 2-3-times higher based on seroprevalence studies, which measure antibodies to the virus that causes COVID-19. (10) While a positive PCR test can only reveal if you have the virus at the time of testing, antibody testing reveals if you have contracted the virus in the past. To complement the prevalence data in this report, TILDA is conducting an antibody seroprevalence study on all consenting participants in early 2021.

We also report that 5%, or 1 in 20, of adults aged 60 and over have lost a family member or friend to COVID-19 infection during the pandemic. This is a significant number of adults in this age group who have experienced loss and bereavement at a most difficult time. This may reflect the higher mortality rates among older adults due to COVID-19, affecting the contemporaries of the participants in the TILDA cohort. The impact of this loss on the mental and physical health of older people has been compounded by the restrictions placed on older adults due to 'cocooning' or 'shielding', particularly for those aged 70 and older. This is explored further in the chapter on the impact of the COVID-19 pandemic on mental and physical health.

Related to this is the concern expressed by older adults about the COVID-19 pandemic in general. The majority of older adults chose scores of nine or ten, indicating that they were 'most concerned' about the COVID-19 pandemic in general. The older adults who were most concerned about the COVID-19 pandemic are aged 70 and over (53%), live alone aged 70 and over (54%), are female (52%), attained primary level educated (56%) and live in rural areas (51%).

In terms of symptoms reported by older adults during the COVID-19 pandemic, the most prevalent were muscle and joint pain (17%), cough (9%), shortness of breath (6%), sore throat (5%), diarrhoea (4%), fever (2%), loss of sense of smell or taste (2%), nausea or vomiting (1%). This is quite consistent with a French study which reported cough and shortness of breath, weakness and gastrointestinal symptoms among those most commonly reported in the 70 and over age group. (11) Cough, shortness of breath, weakness and diarrhoea were also among common symptoms reported in a systematic review and meta-analysis of symptoms among older adults. (12) Both studies however

also reported higher prevalence of fever and lower levels of muscle and joint pain than reported by the TILDA participants.

In conclusion, this chapter shows that the COVID-19 pandemic is causing great concern and is having significant impact on the older community-dwelling adult population, with 5% reporting confirmed or possible infection and a similar percentage having been bereaved by the loss of a family member or friend due to COVID-19.

References

1. Mercier G, Arquizan C, Roubille F. Understanding the effects of COVID-19 on health care and systems. Lancet Public Health. 2020 Oct;5(10):e524. doi: 10.1016/S2468-2667(20)30213-9.

2. Yanez, N.D., Weiss, N.S., Romand, JA. et al. COVID-19 mortality risk for older men and women. BMC Public Health 20, 1742 (2020). https://doi.org/10.1186/s12889-020-09826-8

3. Li J, Huang DQ, Zou B, Yang H, Hui WZ, Rui F, Yee NTS, Liu C, Nerurkar SN, Kai JCY, Teng MLP, Li X, Zeng H, Borghi JA, Henry L, Cheung R, Nguyen MH. Epidemiology of COVID-19: A systematic review and meta-analysis of clinical characteristics, risk factors, and outcomes. J Med Virol. 2020 Aug 13:10.1002/jmv.26424. doi: 10.1002/jmv.26424.

4. Banerjee A, Pasea L, Harris S, Gonzalez-Izquierdo A, Torralbo A, Shallcross L, Noursadeghi M, Pillay D, Sebire N, Holmes C, Pagel C, Wong WK, Langenberg C, Williams B, Denaxas S, Hemingway H. Estimating excess 1-year mortality associated with the COVID-19 pandemic according to underlying conditions and age: a population-based cohort study. Lancet. 2020 May 30;395(10238):1715-1725. doi: 10.1016/S0140-6736(20)30854-0.

5. López-Sánchez GF, López-Bueno R, Gil-Salmerón A, Zauder R, Skalska M, Jastrzębska J, Jastrzębski Z, Schuch FB, Grabovac I, Tully MA, Smith L. Comparison of physical activity levels in Spanish adults with chronic conditions before and during COVID-19 quarantine. Eur J Public Health. 2020 Aug 6:ckaa159. doi: 10.1093/eurpub/ckaa159

6. Bu F, Steptoe A, Fancourt D. Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. Public Health. 2020 Sep;186:31-34. doi: 10.1016/j.puhe.2020.06.036. Epub 2020 Aug 5. PMID: 32768621; PMCID: PMC7405905.

7. Apte S, Doody P, Hernández B, Hever A, Kenny RA, May P, McGarrigle C, O'Halloran A, O'Mahoney P, Roe L, Romero-Ortuno R, Scarlett S, Minjuan Wang, Ward M. The Older Population of Ireland on the Eve of the COVID-19 Pandemic. Dublin. 2020. https://www.doi.org/10.38018/TildaRe.2020-10

8. Central Statistics Office (CSO). Census of Population 2016 - Profile 3 An Age Profile of Ireland. Accessed 21st December 2020. https://www.cso.ie/en/releasesandpublications/ep/p-cp3oy/cp3/assr/

9. Health Protection Surveilance Centre (HPSC). Epidemiology of COVID-19 in Ireland. Report prepared by HPSC on 30/09/2020 for National Public Health Emergency Team. Accessed on 21st December 2020. https://www.hpsc.ie/a-z/respiratory/coronavirus/novelcoronavirus/casesinireland/epidemiologyofcovid-19inireland/september2020/COVID-19_Daily_epidemiology_report_(NPHET)_20200930%20-%20website.pdf

10. Health Service Executive (HSE). Preliminary report of the results of the Study to Investigate COVID-19 Infection in People Living in Ireland (SCOPI): A national seroprevalence study, June-July 2020. 17th August 2020. https://www.hpsc.ie/az/respiratory/coronavirus/novelcoronavirus/scopi/SCOPI%20report%20preliminary%20results%20final%20version.pdf

11. Sacco G, Brière O, Asfar M, Guérin O, Berrut G, Annweiler C. Symptoms of COVID-19 among older adults: a systematic review of biomedical literature. Geriatr Psychol Neuropsychiatr Vieil. 2020 Jun 1;18(2):135-139. doi: 10.1684/pnv.2020.0890.

12. Cédric Annweiler, Guillaume Sacco, Nathalie Salles, Jean-Pierre Aquino, Jennifer Gautier, Gilles Berrut, Olivier Guérin, Gaetan Gavazzi, on behalf of the SFGG COVID-19 study group, National French Survey of Coronavirus Disease (COVID-19) Symptoms in People Aged 70 and Over, Clinical Infectious Diseases, , ciaa792, https://doi.org/10.1093/cid/ciaa792