



Article

# Social Media Use and Associations with Psychological Distress Among Older Adults During the COVID-19 Pandemic

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**Abstract:** Social media may have the double potential to support and undermine mental health, and research is needed to investigate these relationships in age-specified populations. The purpose of this study was to investigate associations between the use of social media and psychological distress among older adults (60 years and above) both nine and 19 months after the outbreak of the COVID-19 pandemic. An online repeated cross-sectional survey was conducted in Australia, Norway, the United Kingdom, and the United States. Participants (9 months:  $n = 679$ ; 19 months:  $n = 238$ ) reported the extent of social media use, motives for using social media, and level of psychological distress using the 12-item version of the General Health Questionnaire (GHQ-12). The data were analysed with descriptive analyses, independent  $t$ -tests and multiple linear regression analyses. Time spent on social media was not associated with psychological distress. Higher psychological distress was associated with higher scores on using social media to ‘reduce loneliness’ at both measurement points. At nine months, higher psychological distress was associated with higher scores on using social media for ‘entertainment’, but the association was not statistically significant at 19 months. Psychological distress was associated with the motive to ‘maintain relationships’ at 19 months, but not at nine months. Guidance for older adults’ use of social media should emphasise how they can be used to promote communication and maintain existing relationships.

**Keywords:** cross-national study; repeated cross-sectional survey; COVID-19 pandemic; older adults; psychological distress; social media

## 1. Introduction

The outbreak of the COVID-19 virus was detected at the end of 2019 in China and spread to the rest of the world within a few months (Amsalem et al. 2021). Older adults (60 years and older) were particularly vulnerable to serious illness and death from the virus, regardless of other risk factors (Ho et al. 2020; WHO 2022). One of the main measures worldwide to prevent the spread of the COVID-19 virus was to introduce social restrictions and quarantines (Amsalem et al. 2021). By limiting social contact and

maintaining distance from others, people protected themselves and others in an attempt to prevent the spread of the virus (WHO 2023a). Visiting restrictions and social distancing resulted for many in a lack of social support. Reduced social contact and support can result in loneliness among older adults, which in turn increases the risk of negative impacts on health and well-being (Sayin Kasar and Karaman 2021). Loneliness and social isolation can be both consequences and causes of mental disorders (WHO 2023b). Means to reduce virus transmission, such as social distancing and quarantine, affected mental health and well-being by reducing the possibilities for interaction between people (WHO 2023a).

Psychological distress is understood as a result of a dynamic process where the individual experiences an intra-personal imbalance created by high demands in their surroundings that exceed their current resources to meet the demands so that their wellbeing is at risk (Lazarus and Folkman 1984). During the pandemic, younger adults experienced the greatest deterioration in mental health (Perry et al. 2023), but older adults also experienced a negative impact on their mental health and well-being, as reported in a recent review (Seckman 2023). As opportunities for interaction and communication changed due to social isolation during the pandemic, older adults could experience psychological distress as they had to use, and perhaps learn to use, other means of communication. Those who used social media to maintain contact with other people achieved a better understanding of different communication possibilities to cope with the new situation and safeguard their mental health (Chen et al. 2022).

The pandemic changed the environmental demands and expectations related to human interaction (Amsalem et al. 2021). Digital communication channels became an opportunity to maintain or establish relationships (Guzman et al. 2023), as well as a facilitator to cope with social isolation during the restrictions (Dahlberg 2021). Social media, defined as 'applications that allow users to engage in interactions with both narrow and broad target groups' (Meier and Reinecke 2021, p. 48), have, for many, become a part of everyday life (Guzman et al. 2023). However, social media can be used actively or passively. Active use of social media involves communicating with other users, sharing life experiences, and creating novel content, including, for example, films, photos, music or text. Passive use, in contrast, involves observing, expressing few personal opinions, and maintaining low engagement with other users (Escobar-Viera et al. 2018; Valkenburg et al. 2022). It has been argued that the active/passive distinction can contribute to explaining the different mental health outcomes of using social media (Thorisdottir et al. 2019).

Several studies have shown that the relationship between the use of social media and psychological distress is ambiguous and that the 'use of social media' is inherently a complex concept encompassing how much (time spent/frequency), why (motives), what (exposure to and engagement with content), how (e.g., active/passive), as well as perceived effects (Awao et al. 2023; Bonsaksen et al. 2024; Guzman et al. 2023; Thygesen et al. 2022; Valkenburg et al. 2022). For example, psychological distress has been found to vary according to motives for social media use; those who used social media with the aim of establishing or maintaining friendships and relationships were shown to have lower levels of psychological distress, while higher distress levels were found among those motivated by a need for entertainment and decreasing loneliness (Thygesen et al. 2022).

To ensure engagement with social media, information about one's social network is provided directly in the feed. This can lead to unfavourable social comparison and thus give rise to unpleasant emotions and reduced self-esteem, thereby affecting mental health. As shown in a recent quasi-experimental study, the introduction of Facebook across US American colleges led to poorer mental health among the students (Braghieri et al. 2022). Psychological distress and social comparisons based on social media may also be reciprocally related in the form of vicious circles; social comparisons lead to more psychological distress, while psychological distress leads to more social comparison (Aubry et al. 2024).

The connection between the use of social media and mental health has also been found to differ between older and younger adults, and this difference may be related to age-varying motives for social media use (Foong et al. 2022). However, studies focusing

on the possible relationships between social media use and mental health have most often been concerned with young people. The use of social media and its relationship with mental health among older adults seems to be largely overlooked, representing a gap in the knowledge base.

Even for older adults, social media has constituted an arena for maintaining relationships with others during the pandemic when regular physical contact was limited and has been shown to inspire social engagement and a lower degree of loneliness (Bonsaksen et al. 2021). However, being insecure about their technological competence and experiencing technology barriers may also instigate psychological distress among older adults (Chen et al. 2022; Mckniff et al. 2023). Different mental health impacts of using different social media channels are also possible, suggesting that one may need to pay particular attention to the social media channels most frequently used by older people. In addition to YouTube, Facebook is reported to be by far the most popular social medium in this age segment (Pew Research Center 2024). Thus, using social media may have the double potential to support and undermine mental health, and considering that both patterns of use and familiarity with technology vary across the age span, research is needed to investigate these relationships in age-specified populations. In particular, the previously established relationships between motives for social media use and psychological distress in a general population sample (Thygesen et al. 2022) need further investigation, specifically among older adults. Moreover, social restrictions changed according to virus transmission rates during the different stages of the pandemic, and such changes may have impacted the relationship between social media use and psychological distress. This study will attempt to fill this knowledge gap and provide mental health professionals with nuanced knowledge of the relationships between social media use and psychological distress among older adults in two different stages of the pandemic.

### *1.1. Purpose of the Study*

The purpose of this cross-national study was to examine the associations between daily time spent on social media, motives for using social media, and psychological distress among older adults at different stages of the COVID-19 pandemic.

### *1.2. Research Questions*

The research questions were as follows:

- (1) How much time did participants spend on social media and what motives did they have for using social media?
- (2) What were the relationships between time spent on social media, motives for using social media, and psychological distress among older adults nine and 19 months after the outbreak of the pandemic?

## **2. Methods**

### *2.1. Study Design and Procedures*

The study design consisted of two cross-sectional surveys that were conducted in Australia, Norway, the United Kingdom, and the United States nine and 19 months after the COVID-19 pandemic outbreak. The initiator of the project was Amy Østertun Geirdal from Oslo Metropolitan University (OsloMet) in Oslo, Norway. Each country had its own project leader due to ethical considerations and permissions. A separate website was set up for the survey on the homepages of the researchers' universities: OsloMet, Norway; University of Michigan, USA; Northumbria University and University of Central Lancashire, United Kingdom; and the University of Queensland, Australia. Linguistic and cultural differences were considered during the development of the two-language survey (Geirdal et al. 2021).

## 2.2. Population and Sample

The main study was focused on the general population. The current study targeted older adults using data from those who reported being 60 years and older. Thus, the study population was older adults who used social media and who mastered the language of the survey in the relevant country, i.e., Norwegian in Norway and English in the other countries. The inclusion criteria were that participants had to be 60 years and older, were able to understand and respond to the questionnaire in the language of the survey, lived in one of the included countries, and had access to and could complete the online survey. There were no other exclusion criteria.

## 2.3. Data Collection

Data collection was carried out in November–December 2020 (nine months group) and November 2021–January 2022 (19 months group). Participants were self-recruited to the study by accessing the electronic questionnaires that were openly available on the Internet and were disseminated through various social media such as Instagram, Facebook, and Twitter.

## 2.4. Measurement

### 2.4.1. Sociodemographic Variables

Sociodemographic variables were age groups (60–69 versus 70 years and older), sex (male, female, other, or prefer not to say), highest completed level of education (less than bachelor's degree versus bachelor's degree or more), marital status (living with spouse/partner versus not living with spouse/partner), and employment status (full-time/part-time work versus not working). At both measurement points, few participants selected the categories 'other' and 'prefer not to say' on the sex variable, and these participants were removed from analyses that included the sex variable.

### 2.4.2. Use of Social Media

#### Daily Use of Social Media

To measure the amount of time participants spent on social media, they were asked to specify the time spent on social media on a typical day in the last month. The following response options were used: <10 min, 10–30 min, 31–60 min, 1–2 h, 2–3 h and more than 3 h (Ellison et al. 2007).

#### Motives for Using Social Media

Participants were asked to indicate their agreement with seven different motives for using social media. The questions were originally designed to assess motives for Facebook use (Teppers et al. 2014) but were adapted to concern social media in general for the cross-national study (Thygesen et al. 2022). The questions were formulated as follows: 'Today I use social media.....', ending with these phrases: 'to feel involved in what's going on with other people' (personal contact motive), 'because it makes me feel less lonely' (decrease loneliness motive), 'so I don't get bored' (entertainment motive), 'to keep in contact with my friends' (maintain relationships motive), 'because I dare to say more' (social skills compensation motive), 'to be a member of something' (social inclusion motive), and 'to make new friends' (meet people motive). The questions had the following response options: never, rarely, sometimes, often, and very often.

### 2.4.3. Psychological Distress

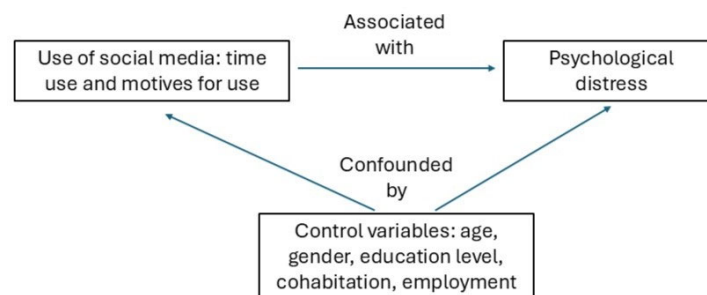
The 12-item General Health Questionnaire (GHQ-12) was chosen as a self-report form for psychological distress (Goldberg et al. 1997; Goodwin et al. 2013). This measure has been validated across samples and contexts (Adlaf et al. 2001; Firth 1986; Goldberg et al. 1997; Aalto et al. 2012; Gorter et al. 2008). When responding to the GHQ-12, the participant indicates how he/she has been in the last two weeks compared to how he/she usually

is. Six questions are positively formulated (for example: ‘felt capable of making decisions’), while six are formulated as a negative experience (for example: ‘lost faith in yourself’). For each question, the participant indicates to what extent the content of the question has been experienced in the last two weeks. The response categories are between 0 and 3, indicating ‘less than usual’, ‘as usual’, ‘more than usual’ or ‘much more than usual’. The positively formulated questions are recoded before analysis. The GHQ-12 score ranges from 0 to 36, where a higher score indicates higher psychological distress (worse mental health). After having recoded the positively phrased items, the GHQ-12 scale reliability was measured with Cronbach’s alpha. Cronbach’s alpha for GHQ-12 was 0.89 after nine months and 0.91 after 19 months. Both measurements indicate strong reliability.

### 2.5. Statistical Analysis

Analyses were carried out in SPSS version 28. Descriptive analyses were performed on all variables. Differences in GHQ-12 scores between sociodemographic groups were performed with the independent t-test. Multiple linear regression analysis was used to assess the direct relationship between each of the independent variables (sociodemographic characteristics, time spent on social media, and motives for using social media) and psychological distress. The independent variables were divided into two blocks. The first block represented sociodemographic variables: age group, sex, level of education, marital status and employment status. The second block represented time spent on social media and motives for using social media. The analysis plan is outlined in Figure 1. Cohen’s *d* and standardised beta values ( $\beta$ ) were reported as effect size and interpreted as follows: effect sizes of approximately 0.10 as small, effect sizes of approximately 0.30 as moderate, and effect sizes of approximately 0.50 as large (Cohen 1992). Statistical significance was set at  $p < 0.05$ . Due to the small number of missing values, cases with missing values were deleted case-wise (analysis by analysis).

Post-hoc analyses of GHQ levels for participants with various levels of social media use were performed as one-way analysis of variance (ANOVA). The multiple linear regression analysis was subsequently run using time spent on social media as a categorical variable, separating participants typically using social media less than one hour daily and those using them one or more hours daily. A post-hoc power analysis was conducted using G\*Power version 3.1.9.7, estimating actual power based on a given effect size and sample size in a multiple linear regression analysis with a given number of predictors (Faul et al. 2007).



**Figure 1.** Model of the tested associations.

### 3. Ethics

The study was conducted in accordance with the Declaration of Helsinki (World Medical Association 2022). Researchers followed all ethical rules in their respective countries. Participation in the project was voluntary, and participants had to actively click on the relevant link to participate in the study. The collected data were anonymous, and participants gave electronic informed consent to participate. The study was approved by OsloMet (20/03676) and the regional committees for medical and health research ethics

(REK; ref.132066) in Norway, reviewed by the University of Michigan Institutional Review Board for Health Sciences and Behavioral Sciences (IRB HSBS) and designated as exempt (HUM00180296) in the USA, by Northumbria University Health Research Ethics (HSR1920-080) and the University of Central Lancashire (UCLan) Health Ethics Review Panel Application (HEALTH 0246) in the United Kingdom, and by The University of Queensland Human Research Ethics Committees (HSR1920-080; 2020000956) in Australia.

#### 4. Results

##### 4.1. Participants

At the first inclusion nine months after the outbreak of the pandemic, 679 people participated. Participants in the age group 60–69 years accounted for 60.7% (n = 412) of the sample, while 39.3% (n = 267) were 70 years and older. There was a majority of women in the sample, 69.4% (n = 471). Regarding education, 67.6% (n = 459) had a bachelor’s degree or more. There were 63.6% (n = 432) who lived with a spouse/partner, and 28.1% (n = 191) were in full-time or part-time work. At the second inclusion 19 months after the outbreak, 238 people participated. There were 65.1% (n = 155) in the age group 60–69 years, while 34.9% (n = 83) were 70 years and older. The majority of the participants were women, 78.5% (n = 182). Regarding education, 65.1% (n = 155) of the participants had higher education. There were 60.5% (n = 144) who lived with a spouse/partner, and 33.6% (n = 80) were in full-time or part-time work. Table 1 shows the participants in the sample.

**Table 1.** Participants in the sample.

Characteristics	9 Months n = 679	%	19 Months n = 238	%
<b>Age group</b>				
60–69	412	60.7	155	65.1
70 years+	267	39.9	83	34.9
<b>Sex</b>				
Male	201	29.9	50	21.6
Female	471	70.1	182	78.5
<b>Education level</b>				
Less than a bachelor’s degree	220	32.4	83	34.9
Bachelor’s degree or more	459	67.6	155	65.1
<b>Cohabitation</b>				
No spouse or partner	247	36.4	94	39.5
Having a spouse or partner	432	63.6	144	60.5
<b>Employment</b>				
Full-time or part-time	191	28.3	80	33.6
No employment	484	71.7	158	66.4

##### 4.2. Use of Social Media

Nine months after the outbreak of the pandemic, 39.3% (n = 267) of the participants reported that they spent an hour or less daily on social media, and 60.7% (n = 412) reported that they used social media for more than one hour daily. ‘Maintaining relationships’ had the highest average score for motives for using social media, while the motive ‘to meet people’ had the lowest average score.

Nineteen months after the COVID-19 outbreak, 41.2% (n = 98) of the participants in the sample reported that they spent one hour or less daily on social media, and 58.7% (n = 140) reported that they used social media for more than one hour daily. Also, in this group, the motive to ‘maintain relationships’ had the highest average score, while the motive ‘to meet people’ had the lowest average score. The time spent on social media and motives for using social media are described in Table 2.

**Table 2.** Time spent on social media and motives for social media use in the sample.

	9 Months (n = 679)	19 Months (n = 238)
<b>Variables</b>		
<b>Daily time on social media</b>	<b>n (%)</b>	<b>n (%)</b>
<10 min	33 (4.9)	8 (3.4)
10–30 min	96 (14.1)	30 (12.6)
0.5–1 h	138 (20.3)	60 (25.2)
1–2 h	199 (29.3)	57 (23.9)
2–3 h	103 (15.2)	41 (17.2)
3 h or more	110 (16.2)	42 (17.6)
<b>Motives</b>	<b>M (SD)</b>	<b>M (SD)</b>
Personal contact	3.45 (1.1)	3.38 (1.1)
Decreases loneliness	2.44 (1.3)	2.34 (1.2)
Entertainment	2.99 (1.2)	2.63 (1.1)
Maintaining relationship	3.66 (1.1)	3.55 (1.1)
Social skills compensation	1.99 (1.2)	2.08 (1.1)
Social inclusion	2.23 (1.2)	2.31 (1.2)
Meeting people	1.57 (0.8)	1.59 (0.8)

Note. Response options for the motive items were never (1), seldom (2), sometimes (3), often (4) and very often (5).

4.3. Psychological Distress

Nine months after the COVID-19 outbreak, participants in the age group 70 years and older reported less psychological distress than those in the age group 60–69 years, with a moderate effect size (ES = 0.24). Women reported more psychological distress than men, and the effect size was large (ES = 0.53). Participants who lived with a spouse/partner reported lower psychological distress than those who did not live with a spouse/partner, with a moderate effect size (ES = 0.23). Psychological distress was not significantly different between participants with higher and lower levels of education, and did not differ between participants who were in full-time or part-time work and those who were not.

Nineteen months after the outbreak of the pandemic, men reported less psychological distress than women, with a moderate effect size (ES = 0.39). Psychological distress was not significantly different between participants in different age groups, between participants with different levels of education, between those who lived with a spouse/partner and those who did not, or between participants who were in full-time or part-time work and those who were not. Table 3 shows the GHQ scores according to the sociodemographic variables in the sample.

**Table 3.** GHQ scores according to sociodemographic variables in the sample.

Characteristics	9 Months				19 Months			
	n	M (SD)	p	ES	n	M (SD)	p	ES
All	679	13.8 (6.2)			238	12.7 (6.3)		
<b>Age group</b>								
60–69	412	14.4 (6.4)	<0.001	0.24	155	12.9 (5.9)	0.47	0.10
70 years+	267	13.0 (5.7)			83	12.3 (7.0)		
<b>Sex</b>								
Male	201	11.6 (5.4)			50	10.7 (5.2)		
Female	471	14.7 (6.2)	<0.001	0.53	182	13.0 (6.2)	0.01	0.39
<b>Education level</b>								
Less than bachelor’s degree	220	14.4 (6.9)	0.15	0.13	83	12.6 (5.8)	0.12	0.02
Bachelor’s degree or more	459	13.6 (5.8)			155	12.7 (6.6)		

<b>Cohabitation</b>								
No spouse or partner	247	14.7 (6.7)	0.01	0.23	94	13.6 (6.8)	0.10	0.23
Having spouse or partner	432	13.3 (5.8)			144	12.1 (5.9)		
<b>Employment</b>								
Full-time or part-time	191	13.7 (5.7)			80	13.0 (6.1)	0.57	0.08
No employment	484	13.9 (6.4)	0.68	0.04	158	12.5 (6.4)		

Note. Statistical tests are independent *t*-tests. *p*-values refer to differences between categories of the sociodemographic variables. Higher GHQ scores indicate poorer mental health. Cohen’s *d* is effect size (ES).

4.4. Associations Between Use of Social Media and Psychological Distress

At nine months, multiple linear regression analysis showed that lower levels of psychological distress were associated with older age and male sex. Time spent using social media on a typical day was not associated with psychological distress. The analysis showed that higher scores on the motive ‘reduce loneliness’ ( $\beta = 0.27, p < 0.001$ ) and ‘entertainment’ ( $\beta = 0.24, p < 0.001$ ) were associated with higher psychological distress. Variation in the social media variables explained 18.7% of the GHQ-12 variance.

At 19 months, the sociodemographic variables were not associated with psychological distress. Time spent using social media on a typical day was also not associated with psychological distress. The analysis showed that higher scores on the motive ‘reduce loneliness’ ( $\beta = 0.32, p < 0.001$ ) were associated with higher psychological distress, while higher scores on the motive ‘maintain relationships’ ( $\beta = -0.19, p < 0.05$ ) were associated with lower psychological distress. Variation in the social media variables explained 17.0% of the GHQ-12 variance. Table 4 shows the adjusted associations with psychological distress in the sample.

Table 4. Adjusted associations with GHQ scores in the sample.

Independent Variables	9 Months n = 669		19 Months n = 232	
	$\beta$	<i>p</i>	$\beta$	<i>p</i>
<b>Sociodemographic variables</b>				
Age	-0.10	0.01	-0.04	0.26
Sex	0.15	<0.001	0.09	0.15
Education level	-0.06	0.07	-0.06	0.32
Cohabitation	-0.01	0.72	-0.01	0.86
Having employment	-0.01	0.81	0.06	0.40
<b>R<sup>2</sup> change</b>	<b>7.9% ***</b>		<b>3.5%</b>	
<b>Social media use</b>				
Time spent on social media daily	-0.01	0.86	0.05	0.47
Personal contact motive	-0.03	0.48	0.05	0.55
Decrease loneliness motive	0.27	<0.001	0.32	<0.001
Entertainment motive	0.24	<0.001	0.14	0.08
Maintaining relationships motive	-0.05	0.22	-0.19	0.02
Social skills compensation motive	0.02	0.60	-0.09	0.26
Social inclusion motive	0.08	0.06	-0.06	0.47
Meeting people motive	-0.05	0.27	0.11	0.13
<b>R<sup>2</sup> change</b>	<b>18.7% ***</b>		<b>17.0% ***</b>	
<b>Explained variance</b>	<b>26.6% ***</b>		<b>20.5% ***</b>	

Note. Age: 60–69 years (0) or 70+ (1). Sex is male (0) or female (1). Education level is less than a bachelor’s degree (0) or bachelor’s degree or more (1). Cohabitation is no spouse or partner (0) or having a spouse or partner (1). Employment is no employment (0) or full-time or part-time employment (1). Table content is standardised beta ( $\beta$ ) values indicating the strength of associations adjusted for all included variables. \*\*\*  $p < 0.001$ .



#### 4.5. Post-Hoc Analyses

Considering the lack of a significant association between the time spent on social media and psychological distress, post-hoc analyses were performed to examine whether treating social media use as an ordinal-level or a categorical-level variable would yield different results. At nine months, the one-way ANOVA showed overall significantly different GHQ levels for participants with varying levels of social media use (omnibus F-test,  $p < 0.001$ ), with the most outspoken differences revealed between those typically using social media less than one hour daily (GHQ levels between 12.2 and 12.7) and those using them one or more hours daily (GHQ levels between 14.1 and 16.1). However, when rerunning the multiple regression analysis at nine months using a dichotomised measure of time spent on social media, time spent using social media was still not significantly associated with psychological distress ( $\beta = 0.04$ , ns).

At 19 months, the same pattern of lower GHQ scores among those with lower levels of social media use was observed (omnibus F-test,  $p < 0.05$ ). Participants typically using social media for less than one hour daily had GHQ levels ranging between 9.5 and 12.5, whereas participants typically using social media for one hour or more daily had GHQ levels ranging between 12.7 and 14.5. Again, however, when rerunning the multiple regression analysis at this time point using the dichotomised measure, the time spent using social media was not significantly associated with psychological distress ( $\beta = 0.04$ , ns).

## 5. Discussion

The purpose of this study was to describe time use and motives for using social media among older adults during the COVID-19 pandemic and to examine associations between time spent on social media, motives for using social media, and psychological distress. The findings from both measurement times showed that the time spent on social media was not associated with psychological distress. Both at nine and 19 months, the analyses showed that higher psychological distress was associated with higher scores on using social media to 'reduce loneliness'. At the first measurement point, higher psychological distress was associated with higher scores on the motive 'entertainment', but the finding was not statistically significant at the second measurement point. Higher psychological distress was not significantly associated with the motive 'maintain relationships' at nine months but was associated with a lower score on this motive at nineteen months. The use of social media explained a substantial part of the variation in participants' experiences of psychological distress at two different times during the COVID-19 pandemic.

Time spent on social media was not associated with psychological distress. This does not coincide with the results of other studies in the field (Awao et al. 2023; Bonsaksen et al. 2023; Geirdal et al. 2021; Helm et al. 2022; Thygesen et al. 2022). These findings from studies of general populations during the pandemic showed a pattern in which high use of social media was related to higher levels of psychological distress. An explanation for older adults spending time on social media during the COVID-19 pandemic without being associated with psychological distress may be that older adults primarily spent their time on social media engaging in social interaction, communication, and information exchange (Foong et al. 2022; Guzman et al. 2023). In addition, using digital communication channels was one of the few possibilities for communicating with friends and family during that time (Chhatwani et al. 2023).

Another explanation for this finding could be that the sample in our study differs from the samples used in other studies, where the participants were significantly younger. Older adults, for example, may have different social and emotional needs when using social media compared to younger adults (Foong et al. 2022; Guzman et al. 2023). In turn, this could affect their time spent using social media and could also reduce the significance of their social media use for their well-being. Thus, our finding suggests that for older adults, it is not the time spent on social media that matters for psychological distress.

This study showed that different motives for using social media were correlated with psychological distress. Using social media to 'reduce loneliness' was associated with higher psychological distress at both nine and 19 months. The analysis also suggested more psychological distress when the motive for using social media was 'entertainment', but less psychological distress when the motive was to 'maintain relationships'. These findings coincide with other general population studies conducted during the early months of the pandemic (Helm et al. 2022), suggesting that these relationships may be valid across age groups. The findings were relatively stable, considering their presence at both measurement times, suggesting that these motives for using social media have a relatively similar significance for psychological distress, despite variations in transmission rates and social restrictions upheld during the different stages of the pandemic.

The findings concerning the different motives for using social media may be linked to the difference between active and passive use of social media (Chhatwani et al. 2023; Escobar-Viera et al. 2018; Helm et al. 2022; Lin et al. 2022; Valkenburg et al. 2022; Verduyn et al. 2015), given that relationship-building motives can be considered more active than avoidance of boredom and loneliness. In a previous study (Valkenburg et al. 2022), older adults with passive use experienced a decrease in well-being and an increase in psychological distress as they compared themselves to others. They experienced social distancing and envy, as they were not included in a community. Conversely, older adults reporting active use of social media have experienced more social support, confidence, independence, and autonomy through interactions with other users (Chen et al. 2022). Therefore, less psychological distress is associated with a higher score on the motive to 'maintain relationships', which corresponds with the theory of active versus passive social media use. In a related vein, older adults with reduced mobility and other geriatric symptoms managed to maintain contact across generations using social media while complying with infection restrictions (Chen et al. 2022). One way to encourage older adults to take an active role in using social media is for friends and family to provide encouragement for their use. Receiving support and coaching in the use of social media from family and friends resulted in older adults having increased personal knowledge of media use, and the motive of 'maintaining relationships' was strengthened, which in turn was linked with lower psychological distress (Haase et al. 2021). On the other hand, the use of social media where the motives are to 'reduce loneliness' and for 'entertainment' fits with a passive, one-way and static use (to use Nowland et al.'s terminology) (Nowland et al. 2018) and it has been related to higher levels of psychological distress (Valkenburg et al. 2022).

The relationship between loneliness and the use of social media can be described as two-way and dynamic (Nowland et al. 2018). Firstly, if older people's motive for using social media is to 'maintain relationships', it is logically related to lower loneliness, as they use social media to sustain their social world. The pandemic context with social isolation meant that using social media for interactive purposes could provide positive experiences for social networks and communities, and thereby, an experience of less psychological distress and loneliness (Chhatwani et al. 2023). Thus, if older adults had good social relationships before the pandemic, it would have been easier to maintain those relationships during the pandemic despite having to use new means of communication.

Secondly, if the motives for using social media were to 'reduce loneliness' and for 'entertainment', this may have led to more passive use—looking at content and browsing without actively participating in interactions with others—which does not lead to inclusion in a social community (Chhatwani et al. 2023). Based on Bekhet et al.'s loneliness concept (Bekhet et al. 2008), the lack of sufficient social connections is at the core. When the connection is missing, it appears that social media is not able to compensate for the lack of social relationships and networks. Longing for interpersonal connections and using social media in futile attempts to achieve this can cause even more psychological distress. This line of reasoning may also be relevant for explaining why the post-hoc analyses substantiated mental health differences between participants with less versus more than one hour spent daily on social media, which became non-significant when adjusting for

other covariates. One may consider that people using social media to compensate for boredom or loneliness can spend more time on social media and that these motives—rather than time spent—constitute the main link to psychological distress. Conversely, using social media to maintain contact with family and friends can result in more focused use which may not be as time consuming.

Motives for using social media may not come only from one's own perceived needs. They may also be shaped and, to some extent, restricted by people's perceived knowledge and skills in using the technologies on which such media are based. For example, older adults who are unsure of their skills in using the technology may use social media in a passive way (Haase et al. 2021). Low self-efficacy and fear of using new technology may contribute to explaining why some older adults choose a passive approach to social media use, thus likely increasing the risk of experiencing higher levels of psychological distress.

### *5.1. Implications for Practice*

The number of older adults in the population is increasing towards 2050 (WHO 2022), and an increasing proportion of them use social media daily (Guzman et al. 2023). Given that the outcomes of social media use seem to be contingent upon how and why they are used, support personnel, as well as engaged family members, may address these aspects with older adults using social media. The associations between different motives for using social media and psychological distress are complex and not suited to convey any simple solutions for the field of practice. However, voluntary organisations, public services, health and social welfare personnel, and others may use this nuanced knowledge when guiding older adults about the possible benefits and costs of using social media. Guidance emphasising how to communicate and interact on social media may help older adults maintain and interact online with their social networks. Thus, social media can be used as a communication tool to prevent or reduce loneliness and contribute to increasing social engagement and positive mental health (Bonsaksen et al. 2021; Chen et al. 2022). Conversely, older adults who are inclined to turn to social media as a remedy for loneliness or boredom may be encouraged to seek other solutions. Engagement with people seems to be a more fruitful way to maintain mental health.

### *5.2. Implications for Further Research*

Future research is necessary to establish any causal relationships, and by using a longitudinal design, information about changing psychological distress in older adults who use social media with different types of motivation can be obtained. Future studies may also include other countries, as associations between the use of social media and psychological distress may vary between low-cost and high-cost countries and between different cultures.

### *5.3. Study Limitations*

This study was based on repeated cross-sectional surveys and its findings cannot be used to imply cause-and-effect relationships. Recruitment of participants occurred through self-recruitment via advertisements and posts published on various social media platforms. This meant that the sampling method was one of convenience and that only older adults who were already on social media had the opportunity to participate. Thus, the results may best apply to older adults who use social media regularly and have easy access to it. The sampling approach might have produced bias in the data, with a possible impact on effect sizes and significance values, and an established impact on the sample composition. In addition, those who were more likely to be online might also be those more likely to respond to the surveys. Another limitation of the study is that there was no knowledge about any potential mental disorders among the participants and whether the participants had developed mental disorders or mental ill-health related to social

distancing during the pandemic. There is also no knowledge about the possible consequences this may have had on their use of social media.

Recall bias when estimating the time spent on social media is a limitation, as it was based on self-reports. Participants had to reflect on how much time they had spent on a typical day in the past month. The responses could be characterised by over- or under-reporting. Furthermore, the different motives for using social media were based on a previous study, and several studies have introduced other motives for social media use that were not included in our study. Thus, the use of these specific motives represents a limitation if there are other motives relevant to their use of social media that were not assessed.

At both data collection points, most participants were women. This sex bias, as well as the bias related to high education levels in the sample, means that great caution should be exercised when interpreting the results. The samples were likely not representative of the general older adult population, thus limiting the possibility of generalising the findings to the general older adult population. The sample size for each of the four countries was too small to run analyses for each country. Thus, possible differences in the patterns of associations between the countries may have gone unnoticed. Similarly, the sample sizes, in particular the sample at 19 months after the pandemic outbreak, may have been too small to reveal statistically significant effects in the data. The non-significant multivariate association between female sex and higher psychological distress at 19 months, which we would expect to be statistically significant, may be considered in support of this methodological interpretation of some of the results. However, a post-hoc power analysis, considering the sample size, effect size (re-calculated as  $f^2$ ), and the number of predictors (13) in the linear regression analysis, revealed a power of 0.90 for the sex-GHQ association at 19 months. While the effect of sex was statistically significant at nine months, the effect size was small. Thus, it seems plausible that the result is actually due to small sex differences in psychological distress in this population, rather than due to insufficient ability in this study to detect such differences.

We can only speculate on the reasons for lower participation in the survey at 19 months. The omicron variant caused much illness at the time, but in general, people became less severely ill than during the outbreak of the previous delta variant. At the time, many had also received appropriate vaccinations, and restrictions in society were about to be lifted. The researchers employed the same recruitment strategy as with previous surveys, so the reasons for the lower participation at the time of the 19 months survey are not likely due to COVID transmission and disease rates nor to a lack of recruitment efforts. Perhaps a general sense of exhaustion with everything COVID-related may contribute to explaining the lower survey participation level towards the end of the pandemic.

## 6. Conclusions

While social media use in recent years has also increased among older adults, most studies on social media use and its relationship with mental health have focused on young people. The current study serves to fill this gap in the literature by assessing such relationships among older adults during different stages of the COVID-19 pandemic. This study showed that the time spent on social media was not associated with psychological distress. However, different motives for using social media correlated with psychological distress among the participants. The findings were relatively stable over time, given the similar findings at the two measurement points. The motive 'reduce loneliness' was associated with higher psychological distress at both measurement points, and the 'entertainment' motive pointed towards more psychological distress. Using social media to 'maintain relationships' with friends and family seems like a suitable strategy, as a stronger endorsement of this motive was related to lower levels of psychological distress. However, one should note that the study does not establish causality. An equally plausible interpretation is that social media use among those with better mental health is more oriented towards maintaining relationships than among those with poorer mental health. This study has brought more nuance to the existing knowledge about the use of social media and how it

can be related to psychological distress among older adults. For older adults, spending time on social media to maintain relationships with others appears to be appropriate and may contribute to protecting and increasing their mental health. Among other groups, mental health workers and social support groups, in general, may benefit from using this specific knowledge to provide guidance to older adults regarding the use of social media. Interaction, communication, and the maintenance of existing relationships may be a fruitful approach to social media use that can support older people's mental health.

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