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ORIGINAL INVESTIGATION

Older Chinese migrants in coronavirus pandemic: exploring risk and protective factors to increased loneliness

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Abstract

Older migrants may be one of the most vulnerable populations during the coronavirus pandemic, yet the degree of impact remains largely unknown. This study explores (1) the consequences of the coronavirus pandemic for older Chinese migrants in Belgium and the Netherlands in terms of increased loneliness and its risk factors (reduced in-person contact, decreased social participation, feelings of existential threat) and protective factors (increased non-in-person contact, more individual activities), and (2) which risk and protective factors have contributed to the incidence and prevention of higher loneliness levels. Using quantitative data of a survey among 98 Chinese migrants aged 50 years and older in Belgium ($n = 84$) and the Netherlands ($n = 14$), the findings first indicate that the coronavirus pandemic has a significant impact on older Chinese migrants' lives. One in five experienced more loneliness. Second, reduced social participation (measured as less frequent participation in outdoor group activities) and financial insecurity (measured as experiencing financial difficulties) lead to higher than pre-pandemic loneliness levels. Problem-focused coping strategies (measured as increased non-in-person contact, via telephone or social media) and emotion-focused coping (measured as finding distraction through increased participation in individual activities) were not found to protect against increased loneliness in the pandemic. Two practical implications for loneliness interventions for older Chinese migrants are put forward. Organizing COVID-19-safe social participation activities and paying more attention to older Chinese migrants' financial situation can be beneficial when addressing higher levels of loneliness due to the coronavirus pandemic.

Keywords Loneliness · COVID-19 · Older Chinese migrants · Risk factors · Protective factors · Coping

Introduction

To contain the coronavirus pandemic, the World Health Organization (WHO) and public health scholars recommend physically distancing measures (Gupta et al. 2020; WHO 2020a). Such measures have been adopted by many countries worldwide (De Haas et al. 2020; Jacobson et al. 2020; Van Ballegooijen et al. 2020). European countries have implemented these suggestions through a variety of measures depending on the severity of the outbreak and its stages. In Belgium, national restrictions began on 13 March 2020, followed by a national lockdown a few days later, on 18 March. The lockdown prohibited non-essential trips (both domestic and international) (Van Ballegooijen et al. 2020), and in-person social contact was kept to a minimum as people were not allowed to visit family and friends (Belgian official information and services 2020). In the Netherlands, an "intelligent lockdown" was imposed in mid-March 2020 and people were urged to stay and work at home as much as possible (De Haas et al. 2020). In both countries, a social distancing rule of 1.5 m was enforced in public spaces and bars, restaurants, schools and gyms, and other "contact professions" were gradually restricted. Nursing homes were

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identified as high-risk settings, resulting in a prohibition of visits.

Older adults were recognized as a risk group in the first wave of the pandemic (United Nations 2020). Compared to younger populations, they are at higher risk of severe illness, hospitalization and admission to intensive care units (European Centre for Disease Prevention and Control 2020). In addition to negative physical health outcomes, older adults might also develop psychological and mental health problems due to lockdown and social distancing measures (United Nations 2020). A recent study in the Netherlands showed that older adults experienced higher levels of both emotional and social loneliness during the pandemic, due to reduced frequency of in-person contact, personal losses (e.g. loss of social contact or care and support) and experience with general threats (e.g. degree of worry about the pandemic) (Van Tilburg et al. 2020). In Hong Kong, older primary care patients with multimorbidity were found to have significant increases in loneliness and anxiety during the pandemic (Wong et al. 2020).

Against this background, older migrants are likely to be even more at risk of COVID-19. Research has identified older migrants as having disadvantaged socio-economic status, worse housing conditions and poorer health (Fokkema 2020; World Health Organization 2018). Besides, due to a combination of strong filial norms, especially among older migrants from a collectivistic culture (De Valk and Schans 2008; Laidlaw et al. 2010; Lee 2007) and a relatively low level of mastery (Van Tilburg and Fokkema 2020), they tend to rely primarily on their children for support (Schoenmakers et al. 2017). This makes them more vulnerable to the consequences of the pandemic (reduced social contact, social participation, existential threat), putting them at risk of increased loneliness.

Not all older migrants will experience increased levels of loneliness though. There are coping strategies to help them through the pandemic, often grouped into problem-focused and emotion-focused (Lazarus and Folkman 1984). Problem-focused or active coping includes behavioural efforts that are aimed directly at solving the problem or changing the sources of stress. In the context of this paper, one strategy could be compensating reduced in-person contact with other, non-in-person forms of contact. Emotion-focused or regulatory coping includes efforts to deal with the problem emotionally, such as cognitive reappraisal (acceptance, positive reframing) of the situation and efforts to avoid directly dealing with the situation. With regard to the latter, in the context of this paper, the strategy could consist of seeking distraction in individual activities.

The focus of this article lies on older Chinese migrants in Belgium and the Netherlands. Chinese migrants began to arrive in Western Europe since World War I (Li 2005; Skeldon 1994). The size of older Chinese migrant communities in both Belgium and the Netherlands has grown rapidly in the last decade: the number of first-generation Chinese (including those from Hong Kong and Macau) aged 50 and older increased from 3076 in 2010 to 5366 in 2019 in Belgium (Eurostat 2020), and from 12,151 in 2010 to 18,588 in 2019 in the Netherlands (Statistics Netherlands 2020). However, compared to former guest workers from Morocco and Turkey, their numbers in these two countries are small (Eurostat 2020; Statistics Netherlands 2020). First-generation older Chinese migrants positioned themselves in the labour market as small ethnic entrepreneurs (e.g. Chinese restaurants) rather than employees, which has resulted in their geographically dispersed settlement (Baker 1994; Pang 1993).

Using survey data of 98 older Chinese migrants, we aim to answer the following research questions:

1. What are the consequences of the coronavirus pandemic for older Chinese migrants in terms of increased loneliness and its risk factors (reduced in-person contact, decreased social participation, feelings of existential threat) and protective factors (increased non-in-person contact, more individual activities)?
2. Which risk and protective factors have contributed to the incidence and prevention of higher loneliness levels?

To answer the second research question, five hypotheses are put forward in the next section.

Theoretical framework and hypotheses

In-person contact with kin and non-kin is an important contributor to older adults' well-being and life satisfaction (Cacioppo et al. 2010; Hawkley et al. 2008), the lack of which might increase loneliness (Jin and Park 2013). Kin relationships and especially children are important in terms of companionship and closeness (Pinquart 2003). The importance of non-kin relationships, including friends and neighbours, for reducing loneliness is also identified (Cacioppo and Patrick 2009). Extant social network research has pointed out that face-to-face contact remains older adults' preferred mode of contact (Hutto and Bell 2014; Jung et al. 2017). Reduced in-person contact due to lockdown and social distancing measures is likely to increase loneliness, particularly among older migrants (Harroui et al. 2020), as they are more dependent on their immediate family, such as adult children, for social support (Park et al. 2018; Schoenmakers et al. 2017). Accordingly, we propose the first hypothesis:

H1 Reduced in-person contact (as evidenced by less in-person contact with children and non-kin during the coronavirus pandemic) leads to increased loneliness.

Social participation is seen as a key factor for ageing well in later life (Chen et al. 2011). Promoting social participation, which goes beyond merely casual talk with acquaintances, is a central part of the WHO's policy response to healthy ageing in later life (WHO 2015). Social participation is a form of social engagement, whereby interpersonal relationships and participation in social activities are seen as an important dimension of social connectedness (Jang et al. 2004). Social participation has the potential to positively affect older adults' health (Douglas et al. 2017; Wanchai and Phrompayak 2019) and seems to be related to lower loneliness levels (Goll et al. 2015; Newall et al. 2009; Victor et al. 2000). Accordingly, we propose the following hypothesis:

H2 Reduced social participation (as evidenced by less frequent participation in outdoor group activities during the coronavirus pandemic) leads to increased loneliness.

Older migrants may also experience a feeling of existential threat posed by COVID-19. The existential threat of an infectious disease and a pandemic was first described by the United Nations Development Programme (UNDP) in 1994 and reaffirmed in 2003 by the United Nations Commission on Human Security (UNHS), as relating to the insecurity of people's health and socio-economic well-being (UN 1994, 2003). In this sense, the existential threat posed by the coronavirus pandemic may include fear of being infected by the new virus and experiencing financial worries and insecurity. It has been shown that COVID-19 creates fear and a snowballing anxiety beyond its logical boundaries (Banerjee and Rai 2020), resulting in behavioural changes such as panic purchases (e.g. stockpiling of toilet paper) (Cox et al. 2020; Tabri et al. 2020). Current research also focuses on the association between threat experienced by COVID-19 and feelings of loneliness. For example, a study in Poland found that loneliness in young adults is correlated with affective response to the coronavirus threat, such as worrying about personal health and financial stability (Okruszek et al. 2020). Van Tilburg et al. (2020) found that the general threat experienced by older adults in the Netherlands has led to an increase in their loneliness level. Accordingly, we propose the following hypothesis:

H3 Existential threat (as evidenced by fear of becoming infected and financial difficulties during the coronavirus pandemic) leads to increased loneliness.

To compensate for the decreased in-person contact, older migrants can use problem-focused coping strategies to deal with increased loneliness, which involves actively dealing with the causes of stress in concrete ways (Deckx et al. 2018). For example, they might turn to other ways to stay in touch with their social network. Telephone usage was found to be the most commonly adopted mode of contact among older adults (Hutto and Bell 2014; Jung et al. 2017). And yet, given that the number of older adults using social media has increased substantially in recent years (Hutto et al. 2015) and has skyrocketed during the current pandemic (Glorieux 2020; Morrow-Howell et al. 2020), social media can be seen as a tool to help them maintain and strengthen geographically close and distant relationships—especially with family (Sum et al. 2008)—as well as mobilize social support (Quan-Haase et al. 2017). In the case of older migrants, family and friends left behind are an important part of distance relationships (Klok et al. 2017; Wilding and Baldassar 2018). Accordingly, we propose the following hypothesis:

H4 Increased non-in-person contact (as evidenced by telephone and/or social media contact with children, other kin and non-kin during the coronavirus pandemic) protects against increased loneliness.

Apart from higher frequency of non-in-person contact as a problem-focused coping strategy against increased loneliness, older adults can also turn to emotion-focused coping strategies, which could consist of avoiding stressors or seeking distractions to counter the emotional consequences of loneliness (Deckx et al. 2018; Schoenmakers et al. 2012, 2015). "Being busy" is often mentioned by older adults as a way of dealing with loneliness emotionally (Kharicha et al. 2018). Distractions from loneliness can be active indoor and outdoor activities, such as at-home exercising and gardening, or more passive activities like watching television (Kharicha et al. 2018; Park et al. 2018). Accordingly, we propose the following hypothesis:

H5 Increased participation in individual activities (as evidenced by initiating new indoor individual activities, doing more frequent outdoor individual activities and/or watching more television during the coronavirus pandemic) protects against increased loneliness.

Methods

Sample

The study was based on an online survey among Chinese migrants in Belgium and the Netherlands aged 50 years and older. The online survey was distributed via the

platform WeChat (Chinese version of WhatsApp) and text (mobile phone) messaging for those without a WeChat account. Study participants were recruited through convenient and snowballing sampling. In Belgium, potential participants were first contacted by the first author in a WeChat group consisting of older Chinese citizens living in Belgium who are interested in topics like ageing well and traditional Chinese medicine. Participants were further encouraged by the first author to forward the participation link either through WeChat or text message to their local Chinese friends who also live in Belgium. In the Netherlands, a social worker in the local Chinese community helped disseminate the survey among her ageing clients, some of whom also invited friends to participate. Belgian data were collected in late March 2020, the second week of the national lockdown in Belgium, and Dutch data for the second week of April 2020, the fourth week of the "intelligent lockdown" in the Netherlands.

The online survey, powered by the Chinese survey website Wenjuanxing (https://www.wjx.cn), started with a description of the study background and aims, clear instructions, and contact details of the researcher. Participants were informed of their right to withdraw from the survey if they had any doubts while completing it. Anonymous participation in the survey was ensured by removing participants' identifying information prior to data cleaning. The questionnaire was divided into four sections: social contact, activity participation, loneliness and well-being, and basic personal information.

The questionnaire was filled by 105 respondents (BE = 90, NL = 15). Median completion time was 26 min (SD = 13.8). We excluded seven cases that had missing data on any of the variables included in the regression model, resulting in a final sample of 98 respondents (BE = 84, NL = 14). Table 1 shows respondents' age ranging from 50 to 83 years ($M = 58.5$); 81% of respondents were female, 71% were married, and 55% had followed university-level education. Average physical health score, ranging from 1 (very good) to 5 (very bad), was 2.3.

Table 1 Descriptive statistics ($N = 98$)

	%/*M*
Dependent variable	
Increased loneliness	21.4
Risk factors	
Reduced in-person contact with children	30.6
Reduced in-person contact with non-kin	68.4
Reduced social participation	73.5
Fear of becoming infected	63.3
Financial insecurity	41.8
Protective factors	
Increased non-in-person contact with children	43.9
Increased non-in-person contact with other kin and non-kin	81.6
Increased participation in individual activities	83.7
Control variables	
Age (50–83)	58.5
Female	80.6
Married	71.4
Physical health (1: very good–5: very bad)	2.3
University-level education	55.1

Measurements

Dependent variable

Increased loneliness was assessed by asking respondents whether they felt more lonely because of the coronavirus pandemic. Respondents could answer on a 5-point Likert scale (1: much more lonely, 2: more lonely, 3: more or less equally lonely, 4: less lonely, 5: much less lonely). We distinguished those who felt (much) more lonely (1) from the remaining respondents (0).

Risk factors

Reduced in-person contact was gauged by two variables. *Reduced in-person contact with children* was measured based on the question "Compared with pre-coronavirus pandemic, with what frequency did face-to-face contact with your children change?" Respondents answered this question on a 5-point Likert scale (1: much more frequently, 2: more frequently, 3: more or less the same frequency, 4: less frequently, 5: much less frequently). We distinguished those who had (much) less frequent contact with their children (1) from the others, and followed the same procedure for *reduced in-person contact with non-kin* (local friends and neighbours).

To measure *reduced social participation*, respondents were asked about change in frequency of outdoor group activities. Answer categories ranged from "much more frequently" (1) to "much less frequently" (5), and we divided respondents into two groups: those who participated (much) less frequently in outdoor group activities because of the pandemic (1) and others (0).

Existential threat was gauged by two variables. *Fear of becoming infected* was assessed by asking respondents to what extent they were afraid of becoming infected with COVID-19, with response options "no, not at all", "no, not so much", "no", "yes, a little bit", and "yes, very much". We distinguished those being "yes, a little bit" or "yes, very much" afraid of becoming infected with COVID-19 (1) from the remaining respondents (0). For *financial insecurity*, respondents were asked to report their current financial

status. Respondents could answer this question on a 6-point Likert scale (1: with great difficulty, 2: with difficulty, 3: with some difficulty, 4: fairly easily, 5: easily, 6: very easily). Those who perceived great or some financial difficulties were assigned a score of 1, others a score of 0.

Protective factors

Two types of protective factors were expected in the study: increased non-in-person contact, gauged by two variables, and increased participation in individual activities. *Increased non-in-person contact with children* was measured by asking respondents how their telephone or social media contact with their children had changed compared to what it was like before the pandemic. Response options ranged from "much more frequently" (1) to "much less frequently" (5). Respondents who reported (much) more frequent non-in-person contact with their children were coded 1, the others were coded 0. We followed the same procedure for *increased non-in-person contact with other kin and non-kin* (local friends, neighbours, relatives and friends in China).

Increased participation in individual activities was constructed by combining answers on three questions: changes in hours of television watching (1: many more hours, 2: more hours, 3: more or less the same, 4: fewer hours, 5: much fewer hours), whether they initiated new indoor activities (1: yes, 2: no), and changes of frequency in outdoor individual activities (1: much more frequently, 2: more frequently, 3: more or less the same frequency, 4: less frequently, 5: much less frequently). Those who watched television for (many) more hours, initiated new indoor activities and/or participated (much) more frequently in outdoor individual activities (1) were differentiated from the other respondents (0).

Control variables

Age, gender, marital status (married versus single/divorced/widowed), self-perceived physical health (1: very good, 2: good, 3: fairly good, 4: bad, 5: very bad) and education (university-level education versus lower/secondary) were included in this study as control variables.

Procedure

To answer the first research question, frequency analyses were conducted for the dependent variable and the key independent variables (risk and protective factors). To address the second research question and test the five hypotheses, logistic regression was conducted. Concerns over multicollinearity among predictors for increased loneliness level were dismissed, as the outcomes for the VIF value of collinearity statistics were all smaller than 2.0 (Senaviratna and Cooray 2019). We used SPSS Statistics (Version 26) software.

Results

Descriptive statistics

Table 1 presents descriptive statistics of the dependent variable (increased loneliness) and the key independent variables (risk and protective factors). 21.4% of respondents reporting higher than pre-pandemic levels of loneliness, 62.2% reporting no change and 16.3% reporting fewer feelings of loneliness. On respondents' changes in social contact, 30.6% had less frequent in-person contact with their children, 68.4% with non-kin. On the other hand, 43.9% had more frequent non-in-person contact with their children by phone or social media, 81.6% with other kin and non-kin. On respondents' activity participation, 73.5% participated less often in outdoor group activities and 83.7% initiated new individual activities. On the COVID-19-related existential threat, 63.3% were worried about becoming infected with the novel virus and 41.8% experienced financial insecurity.

Regression analysis

Table 2 displays the results of the binary logistic regression analysis. The results showed no support for Hypothesis 1—reduced in-person contact leads to increased loneliness. Having (much) less frequent in-person contact with either

Table 2 Logistic regression of increased loneliness ($N=98$)

	B	*SE*
Risk factors		
Reduced in-person contact with children	0.47	0.67
Reduced in-person contact with non-kin	− 0.06	0.74
Reduced social participation	1.99**	0.96
Fear of becoming infected	0.30	0.75
Financial insecurity	1.84***	0.67
Protective factors		
Increased non-in-person contact with children	1.11	0.70
Increased non-in-person contact with other kin and non-kin	− 0.53	0.86
Increased participation in individual activities	1.85	1.23
Control variables		
Age (50–83)	0.01	0.06
Female	− 1.49*	0.83
Married	0.24	0.76
Physical health (1: very good—5: very bad)	0.57	0.41
University-level education	1.17*	0.69

*$p<0.1$; **$p<0.05$; ***$p<0.01$

one's children or non-kin was not significantly related to experiencing increased levels of loneliness. Hypothesis 2—reduced social participation leads to increased loneliness—was supported. Those who participated (much) less frequently in outdoor group activities were over 7 times (EXP $\beta = 7.028$, $p = 0.039$) more likely to have higher loneliness levels than those without reduced social participation. Hypothesis 3—COVID-19-related existential threat leads to increased loneliness—was partially supported. Respondents who had financial difficulties during the coronavirus pandemic were over 6 times (EXP $\beta = 6.32$, $p = 0.006$) more prone to higher loneliness levels. Despite being in the expected direction, fear of becoming infected with the coronavirus showed no significant relation with increased loneliness. Hypothesis 4—increased non-in-person contact protects against increased loneliness—was rejected. Experiencing increased feelings of loneliness was not significantly related to (much) more frequent contact by phone or social media with one's children or with other kin or non-kin. No support was found for Hypothesis 5 either—increased participation in individual activities led to increased loneliness.

As for the control variables, women were less likely (EXP $\beta = 0.23$, $p = 0.071$) and those with university-level education were more likely (EXP $\beta = 3.23$, $p = 0.091$) to experience increased loneliness. At first glance, the positive association between university-level education and increased loneliness is somewhat surprising, as higher levels of education are often negatively related to loneliness (Fokkema and Naderi 2013; Hawkley et al. 2008). However, we do find a positive association between higher education and loneliness among older Chinese migrants in 'normal times' (Liu et al. 2019; Simon et al. 2014). The model accounts for 40% of the total variation (Nagelkerke $R^2 = 0.40$).

Discussion

Our aim in this study was to explore the consequences of the coronavirus pandemic, including increased loneliness, for older Chinese migrants and to explore possible risk and protective factors for increased levels of loneliness. To answer our two research questions, survey data of 98 older Chinese migrants living in Belgium and the Netherlands were analysed. The following section discusses the outcomes of the research questions. Study limitations, directions for future research and practical implications are also formulated.

For the first research question, the results indicate that the coronavirus pandemic had an important impact on older Chinese migrants' social life. 21.4% of older Chinese migrants in Belgium and the Netherlands have experienced increased loneliness. While 30.6% of older Chinese migrants report having less in-person contact with their children, it is mainly the in-person contact with non-kin which has decreased (68.4%). In addition, almost three in four participate less frequently in outdoor group activities. Not only people's social life is affected, but Chinese migrants also experience an enhanced existential threat: 63.3% fear becoming infected and 41.8% experience financial difficulties. Still, an increase in certain protective factors was also found. In-person social contact, for example, seems to have been replaced, or even supplemented, by increased non-in-person contact: 43.9% had increased non-in-person contact with their children and 81.6% with non-kin. Lastly, 83.7% of Chinese migrants engage more in individual activities.

The second research question explored which risk and protective factors have contributed to the incidence and prevention of increased loneliness levels as a result of the coronavirus pandemic. After testing five hypotheses, findings reveal that two risk factors play a significant role in increased loneliness among older Chinese migrants. First, in accordance with the theoretical expectations, reduced social participation (measured as reduced participation in outdoor group activities) during the coronavirus pandemic leads to increased loneliness among older Chinese migrants (Hypothesis 2 confirmed). Although no comparable research is found among older Chinese migrants, previous studies have demonstrated the beneficial role of social participation on mental health of older adults (Bourassa et al. 2017). Second, the expected positive impact of a COVID-19-related existential threat on increased loneliness is partly supported (Hypothesis 3). It was not the fear of becoming infected with the virus but financial insecurity (measured as experiencing financial difficulties) which significantly increased older Chinese migrants' loneliness levels. This finding shows that loneliness during the coronavirus pandemic among older Chinese migrants is related to factors which are broader than meaningful social contact. An explanation might be related to their main working sector. For example, at least 38 of our respondents are or were engaged in the Chinese restaurant or catering business. As the restaurant business has been hit hard by COVID-19 (Baker et al. 2020), the pandemic might yield more negative implications for this group of older Chinese migrants compared to other groups. However, due to the limitation of survey design (occupation being asked as an open question with a mixture of current job and career before retirement), we could not include occupation in the analysis.

Third, Hypothesis 1 of reduced in-person contact leading to increased loneliness among older Chinese migrants could not be confirmed. One possible explanation might lie in the way loneliness is defined. Following the definition of De Jong Gierveld (1987: 120), loneliness stems from a lack of quality relationships, more specifically from "situations in which the number of existing relationships is smaller than is considered desirable or admissible, as well as situations where the intimacy one wishes for has not been realised".

It could be assumed that expectations of in-person contact might be lowered because of lockdown regulations, and as people did not expect a lot of contact, this had no effect on their level of loneliness.

In terms of protective factors, this study explored two types of coping: problem-focused coping (measured as increased non-in-person contact via telephone and social media, H4) and passive or avoidant emotion-focused coping (measured as seeking distraction via increased participation in individual activities, H5). Both hypotheses were rejected, which means that none of the investigated coping strategies appear to be effective to counter the negative impact of the coronavirus pandemic on loneliness. It could be hypothesized that active emotion-focused coping (e.g. tolerating the loneliness or positive thinking) (Park et al. 2018), which we did not include in our research, could be a more powerful coping strategy in the times of COVID-19.

To the best of our knowledge, this is the first quantitative study to explore the impact of COVID-19 on increased loneliness and its possible risk and protective factors among older Chinese migrants, or even among older migrants in general. Although it is still premature to generalize our findings to other migrant groups that need more future study, some comparisons could be made based on the few publications available so far. The findings to the first research question that during the pandemic a substantial part of older Chinese migrants have reduced in-person contact with children and social participation plus fear of becoming infected also hold true for older Moroccan migrants in the Netherlands (Harroui et al. 2020). The finding that COVID-19 has more impact on in-person contact with non-kin than on in-person contact with children might be more specific to older Chinese migrants because of their dispersed geographic settlement (Baker 1994; Pang 1993). While a large proportion of older Moroccan and Turkish migrants live concentrated in large cities (Fokkema and Conkova 2018; Fokkema and Das 2020), older Chinese migrants tend to live at greater distances from same-ethnic peers. Because of travel restrictions during the pandemic, visiting each other is severely limited. The findings to the second research question that decreased social participation and financial difficulty lead to higher loneliness during the pandemic might also be relevant for other older migrant groups. Qualitative research of older Moroccan migrants in the Netherlands found that in the first period of the coronavirus pandemic decreased social participation, and religious participation in particular, are linked with higher loneliness (Harroui et al. 2020). A recent report by WHO points out that financial difficulty during the pandemic is a risk factor for greater feelings of loneliness in the general migrant group not restricted to older migrants (WHO 2020b: 17).

Although the study provides useful insights, it is not without limitations worth addressing in future research. First, the adoption of convenient sampling and a snowballing recruitment strategy resulted in a non-representative sample. Second, this study has a relatively small sample size of 98 older Chinese migrants. A small sample size increases the probability of making a type II error (i.e. predictors are deemed insignificant while in fact they are important; Hackshaw 2008). For example, when we found that reduced frequency of face-to-face contact with children was not significantly predicting increased loneliness, we cannot conclude there is actually no effect. A larger sample size would increase the power and could provide more certainty about the trends observed in our research. Furthermore, a small sample size hinders us from exploring within-group differences in the consequences of the pandemic and their impact on loneliness by factors like age, gender and loneliness profiles (e.g. comparing those who did not feel lonely to those who already felt intensely lonely before the pandemic). Third, the changed loneliness levels compared to pre-pandemic levels are measured using a self-reported survey question. A lack of baseline, pre-pandemic loneliness measurement precluded the researchers from exploring the changes in loneliness in more precise, quantitative ways. Future research is also needed to determine how further development of the pandemic will bring changes to predictors of increased loneliness during the pandemic. Up until now—early February 2021—the pandemic has been everyone's reality for almost one year, and both Belgium and the Netherlands are again in a lockdown phase without a clear end date from the government. Due to fluctuating confinement rules, social opportunities might be changing, and people's ability to switch and actively deal with these changes might affect aspects like their financial situation, social participation, coping or loneliness. The consequences of prolonged social confinement might be long-term and should be monitored closely.

On the basis of our findings, two important practical implications can be formulated. First, our results point to the importance of outdoor group activities, showing decreased participation in these activities as a significant risk factor for loneliness. The review study of O'Rourke et al. (2018) presented group activities as one of the most-used intervention strategies to address social connectedness and loneliness. Moreover, a recent report by Salway et al. (2020) points out that shared-identity social support groups (similar people coming together to support each other and engage in meaningful activities) exhibit the strongest beneficial effects for migrants. We can therefore recommend looking for ways to continue organizing these outdoor group activities in a COVID-19-friendly way so that people feel safe and are able to participate. Second, this study showed the significant contribution of having financial difficulties on increased loneliness. Accordingly, addressing and intervening on loneliness should not solely consist of organizing interventions such as aiming to increase personal or group social

contacts—instead, more attention to the difficult financial situation of older Chinese migrants is recommended.

Author contributions The research idea and first version of the English survey were conceived by TF. With feedback from LD and SH, HP adapted and finalized the questionnaire. HP translated it into Mandarin Chinese and coordinated the recruitment of respondents and data collection. Data cleaning was performed by TF and HP. Statistical analyses were conducted by HP with the assistance of TF and LD. HP took the lead in writing the manuscript. All co-authors provided feedback and revised several versions of the manuscript.

References

Baker HDR (1994) Branches all over: the Hong Kong Chinese in the United Kingdom. In: Skeldon R (ed) Reluctant exiles? Migration from Hong Kong and the new overseas Chinese. ME Sharpe, New York, pp 291–307

Baker SR, Farrokhnia RA, Meyer S, Pagel M, Yannelis C (2020) How does household spending respond to an epidemic? Consumption during the 2020 COVID-19 pandemic. MA: National Bureau of Economic Research: Working Paper 26949. http://www.nber.org/papers/w26949 Accessed 20 Sep 2020.

Banerjee D, Rai M (2020) Social isolation in COVID-19: the impact of loneliness. Int J Soc Psychiatry 66:525–527

Belgian official information and services (2020) Coronavirus COVID-19 frequently asked questions. https://web.archive.org/web/20200407125431/https://www.info-coronavirus.be/en/faq/. Accessed 10 Sep 2020.

Bourassa KJ, Memel M, Woolverton C, Sbarra DA (2017) Social participation predicts cognitive functioning in aging adults over time: comparisons with physical health, depression, and physical activity. Aging Ment Health 21:133–146

Cacioppo JT, Patrick W (2009) Loneliness: human nature and the need for social connection. Norton & Company, New York

Cacioppo JT, Hawkley LC, Thisted RA (2010) Perceived social isolation makes me sad: 5-year cross-lagged analyses of loneliness and depressive symptomatology in the Chicago health, aging, and social relations study. Psychol Aging 25:453–463

Chen K, Hung H, Lin H, Haung H, Yang Y (2011) Development of the model of health for older adults. J Adv Nurs 67:2015–2025

Cox DA, Bowman K, Clemence J (2020) Fear, frustration, and faith: Americans respond to the coronavirus outbreak. https://www.aei.org/wp-content/uploads/2020/04/APS-Mar-2020-Report-PDF-Online-Version.pdf. Accessed 9 Sep 2020.

De Haas M, Faber R, Hamersma M (2020) How COVID-19 and the Dutch 'intelligent lockdown' change activities, work and travel behaviour: evidence from longitudinal data in the Netherlands. Transp Res Interdiscip Perspect 6:1–11

De Jong GJ (1987) Developing and testing a model of loneliness. J Pers Soc Psychol 53:119–128

De Valk HAG, Schans D (2008) "They ought to do this for their parents": perceptions of filial obligations among immigrant and Dutch older people. Ageing Soc 28:49–66

Deckx L, van den Akker M, Buntinx F, van Driel M (2018) A systematic literature review on the association between loneliness and coping strategies. Psychol Health Med 23:899–916

Douglas H, Georgiou A, Westbrook J (2017) Social participation as an indicator of successful aging: an overview of concepts and their associations with health. Aus Health Review 41:455–462. https://doi.org/10.1071/AH16038

European Centre for Disease Prevention and Control (2020) Coronavirus disease 2019 (COVID-19) in EU/EEA and the UK—eighth update. https://www.ecdc.europa.eu/en/publications-data/rapid-risk-assessment-coronavirus-disease-2019-covid-19-pandemic-eighth-update. Accessed 10 Sep 2020

Eurostat (2020) Population on 1 January by age group, sex and birth of country. https://ec.europa.eu/eurostat/databrowser/view/migr_pop3ctb/default/table?lang=en Accessed 26 Jan 2021

Fokkema T (2020) Migranten van het eerste uur: een verloren generatie op leeftijd? [Migrants of the first hour: a lost generation at age?]. Sociologie 15:209–233

Fokkema T, Conkova N (2018) Turkse en Marokkaanse ouderen in Nederland en België: een sociaal-demografisch profiel [Turkish and Moroccan older adults in the Netherlands and Belgium: a socio-demographic profile]. Gerõn, Tijdschrift over ouder worden en maatschappij 20:15–19

Fokkema T, Das M (2020) Familienetwerken van niet-westerse oudere migranten [Family networks of non-Western older migrants]. Jaarrapport Integratie, CBS, pp 190–214

Fokkema T, Naderi R (2013) Differences in late-life loneliness: a comparison between Turkish and native-born older adults in Germany. Eur J Ageing 10:289–300

Glorieux A (2020) Contact vanop een afstand: hoe krijgt virtueel contact een plaats in ons dagelijks leven tijdens social distancing? [Contact from a distance: how does virtual contact get a place in our daily lives during social distancing?] In: Brengman M (ed) Postviraal naar een nieuw normaal. VUB stemmen over de impact van corona op onze samenleving. VUB Press, Brussel, pp 225–233

Goll JC, Charlesworth G, Scior K, Stott J (2015) Barriers to social participation among lonely older adults: the influence of social fears and identity. PLoS ONE 10(2):e0116664

Gupta A, Singla M, Bhatia H, Sharma V (2020) Lockdown—the only solution to defeat COVID-19. Int J Diabetes Dev Ctries 40:310–311

Hackshaw A (2008) Small studies: strengths and limitations. Eur Respir J 32:1141–1143

Harroui S, Conkova N, Fokkema T (2020) De impact van het COVID-19 virus op het dagelijkse leven van Marokkaanse migrantenouderen [The impact of the COVID-19 virus on the daily lives of Moroccan older migrants]. Gerõn, Tijdschrift over ouder worden en maatschappij 22. https://gerontijdschrift.nl/artikelen/de-impact-van-het-covid-19-virus-op-het-dagelijkse-leven-van-marokkaanse-migrantenouderen/. Accessed 30 Jan 2020

Hawkley LC, Hughes ME, Waite LJ, Masi CM, Thisted RA, Cacioppo JT (2008) From social structural factors to perceptions of relationship quality and loneliness: the Chicago health, aging, and social relations study. J Gerontol B Psychol Sci Soc Sci 63B:S375–S384

Hutto C, Bell C (2014) Social media gerontology: understanding social media usage among a unique and expanding community of users. In: 47th Hawaii international conference on system science. IEEE, pp 1755–1764

Hutto CJ, Bell C, Farmer S, Fausset C, Harley L, Nguyen J, Fain B (2015) Social media gerontology: understanding social media usage among older adults. Web Intell 13:69–87

Jacobson NC, Lekkas D, Price G, Heinz MV, Song M, O'Malley AJ, Barr PJ (2020) Flattening the mental health curve: COVID-19 stay-at-home orders are associated with alterations in mental health search behavior in the United States. JMIR Ment Health 7:e19347

Jang Y, Mortimer JA, Haley WE, Graves ARB (2004) The role of social engagement in life satisfaction: its significance among older individuals with disease and disability. J Appl Gerontol 23:266–278

Jin B, Park N (2013) Mobile voice communication and loneliness: cell phone use and the social skills deficit hypothesis. New Media Soc 15:1094–1111

Jung EH, Walden J, Johnson AC, Sundar SS (2017) Social networking in the aging context: why older adults use or avoid Facebook. Telemat Inform 34:1071–1080

Kharicha K, Manthorpe J, Iliffe S, Davies N, Walters K (2018) Strategies employed by older people to manage loneliness: systematic review of qualitative studies and model development. Int Psychogeriatr 30:1767–1781

Klok J, van Tilburg TG, Suanet B, Fokkema T, Huisman M (2017) National and transnational belonging among Turkish and Moroccan older migrants in the Netherlands: protective against loneliness? Eur J Ageing 14:341–351

Laidlaw K, Wang D, Coelho C, Power M (2010) Attitudes to ageing and expectations for filial piety across Chinese and British cultures: a pilot exploratory evaluation. Aging Ment Health 14:283–292

Lazarus RS, Folkman S (1984) Stress, appraisal, and coping. Springer, New York

Lee Y (2007) The immigration experience among elderly Korean immigrants. J Psychiatr Ment Health Nurs 14:403–410

Li M (2005) Chinese in Europe. In: Ember M, Ember CR, Skoggard I (eds) Encyclopedia of diasporas. Springer, Boston, pp 656–663

Liu J, Mao W, Guo M, Xu L, Chi I, Dong X (2019) Loss of friends and psychological well-being of older Chinese immigrants. Aging Ment Health 25:323–331

Morrow-Howell N, Galucia N, Swinford E (2020) Recovering from the COVID-19 pandemic: a focus on older adults. J Aging Soc Policy 32:526–535

Newall NE, Chipperfield JG, Clifton RA, Perry RP, Swift AU, Ruthig JC (2009) Causal beliefs, social participation, and loneliness among older adults: A longitudinal study. J Soc Pers Relat 26:273–290

O'Rourke HM, Collins L, Sidani S (2018) Interventions to address social connectedness and loneliness for older adults: a scoping review. BMC Geriatr 18:214

Okruszek L, Aniszewska-Stańczuk A, Piejka A, Wiśniewska M, Żurek K (2020) Safe but lonely? Loneliness, mental health symptoms and COVID-19 [Preprint]. PsyArXiv

Pang CL (1993) Tussen inpassing en identiteit: de Chinese gemeenschap in België [Between integration and identity: the Chinese community in Belgium]. Hoger Instituut voor de Arbeid, KU Leuven, Leuven

Park H, Morgan T, Wiles J, Gott M (2018) Lonely ageing in a foreign land: social isolation and loneliness among older Asian migrants in New Zealand. Health Soc Care Commun 27:740–747

Pinquart M (2003) Loneliness in married, widowed, divorced, and never-married older adults. J Soc Pers Relat 20:31–53

Quan-Haase A, Mo GY, Wellman B (2017) Connected seniors: how older adults in East York exchange social support online and offline. Inf Commun Soc 20:967–983

Salway S, Such E, Preston L, Booth A, Zubair M, Victor C, Raghavan R (2020) Reducing loneliness among migrant and ethnic minority people: a participatory evidence synthesis. Public Health Research 8:1–246

Schoenmakers EC, van Tilburg TG, Fokkema T (2012) Coping with loneliness: what do older adults suggest? Aging Ment Health 16:353–360

Schoenmakers EC, van Tilburg TG, Fokkema T (2015) Problem-focused and emotion-focused coping options and loneliness: how are they related? Eur J Ageing 12:153–161

Schoenmakers D, Lamkaddem M, Suurmond J (2017) The role of the social network in access to psychosocial services for migrant elderly—a qualitative study. Int J Environ Res Public Health 14:1215–1226

Senaviratna NAMR, Cooray TMJA (2019) Diagnosing multicollinearity of logistic regression model. Asian J Probab Stat 5:1–9

Simon MA, Chang E-S, Zhang M, Ruan J, Dong X (2014) The prevalence of loneliness among U.S. Chinese older adults. J Aging Health 26:1172–1188

Skeldon R (1994) Reluctant exiles? Migration from Hong Kong and the new overseas Chinese. ME Sharpe, New York

Statistics Netherlands (2020) Population; sex, age, migration background and generation. https://opendata.cbs.nl/statline/#/CBS/en/dataset/37325eng/table?ts=1525890294932. Accessed 26 Jan 2021

Sum S, Matthews MR, Pourghasem M, Hughes I (2008) Internet technology and social capital: how the Internet affects seniors' social capital and well-being. J Comput-Mediat Commun 14:202–220

Tabri N, Hollingshead S, Wohl MJA (2020) Framing COVID-19 as an existential threat predicts anxious arousal and prejudice towards Chinese people [Preprint]. PsyArXiv.

United Nations (1994) Human Development Report. https://web.archive.org/web/20120805182448/http://hdr.undp.org/en/media/hdr_1994_en_contents.pdf. Accessed 7 Sep 2020

United Nations (2003) Human security-now. https://web.archive.org/web/20121108224933/http://ochaonline.un.org/humansecurity/CHS/finalreport/Outlines/outline.html. Accessed 7 Sep 2020

United Nations (2020) Policy brief: the impact of COVID-19 on older persons. https://www.un.org/development/desa/ageing/wp-content/uploads/sites/24/2020/05/COVID-Older-persons.pdf. Accessed 8 Sep 2020

Van Ballegooijen H, Goossens L, Bruin RH, Michels R, Krol M (2020) Concerns, quality of life, access to care and productivity of the general population during the first 8 weeks of the coronavirus lockdown in Belgium and the Netherlands [preprint]. Public and Global Health

Van Tilburg TG, Fokkema T (2020) Stronger feelings of loneliness among Moroccan and Turkish older adults in the Netherlands: in search for an explanation. Eur J Ageing. https://doi.org/10.1007/s10433-020-00562-x

Van Tilburg TG, Steinmetz S, Stolte E, van der Roest H, de Vries DH (2020) Loneliness and mental health during the COVID-19 pandemic: a study among Dutch older adults. J Gerontol B Psychol Sci Soc Sci. https://doi.org/10.1093/geronb/gbaa111

Victor C, Scambler S, Bond J, Bowling A (2000) Being alone in later life: loneliness, social isolation and living alone. Rev Clin Gerontol 10:407–417

Wanchai A, Phrompayak D (2019) A systematic review of factors influencing social participation of older adults. Pac Rim Int J Nurs Res Thail 23:131–141

Wilding R, Baldassar L (2018) Ageing, migration and new media: the significance of transnational care. J Sociol 54:226–235

Wong SYS, Zhang D, Sit RWS, Yip BHK, Chung RY, Wong CKM, Chan DCC, Sun W, Kwok KO, Mercer SW (2020) Impact of COVID-19 on loneliness, mental health, and health service utilisation: a prospective cohort study of older adults with multimorbidity in primary care. Br J Gen Pract 70:817–824

World Health Organization (2015) World report on ageing and health. World Health Organization, Geneva

World Health Organization (2018) Health of older refugee and migrants. https://www.euro.who.int/__data/assets/pdf_file/0003/386562/elderly-eng.pdf. Accessed 10 Sep 2020

World Health Organization (2020a) COVID-19: physical distancing. https://www.who.int/westernpacific/emergencies/covid-19/information/physical-distancing. Accessed 21 Sep 2020

World Health Organization (2020b) ApartTogether survey: preliminary overview of refugees and migrants self-reported impact of Covid-19. https://www.who.int/publications/i/item/9789240017924. Accessed 17 Jan 2020

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