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ARTICLE

Together through technology: next of kin's use of technology to maintain social connection with nursing home residents

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Abstract

Next of kin play a vital role in the informal care of older relatives in long-term-care facilities (LTCFs). However, finding a sustainable balance between everyday commitments and caring for their loved ones can be demanding, and there is a need to explore new ways to support their caregiving efforts while prioritising their wellbeing. Digital communication technologies have shown promise in enabling meaningful social interactions between older adults and their families, yet their potential to foster connections in LTCFs remains understudied. This study explores the efficacy of a communication technology called Komp in facilitating meaningful connections between next of kin and older relatives in LTCFs. It utilises Norwegian data from all public nursing homes in Oslo municipality to assess whether Komp can facilitate social contact between nursing home residents and their next of kin, and if the use of Komp impacts the next of kin's experience of satisfaction with this contact. Based on 238 next of kin, this study uses two data sources: (1) survey data collected from all next of kin, in three waves, and (2) a highly detailed weekly data stream from each Komp device. These sources are combined and analysed using multiple regression analysis. The results generally show a positive and significant relationship between use of Komp and increased social satisfaction, indicating that Komp can serve as a valuable tool to help next of kin maintain social bonds with older relatives in LTCFs.

Keywords: social connection; communication technology; nursing home; long-term care; next of kin; social needs

Introduction

Many next of kin value their involvement in the care of older relatives, and they continue to be involved even after their loved ones are placed in long-term-care facilities (LTCFs) (Ekström et al., 2019; Keefe and Fancey, 2000). While most of the care responsibility transitions from the informal family system to the institutions

following placement, numerous studies have shown that family members continue to make an effort to maintain their social bonds in alternative ways. Such efforts may include regular visitations, keeping in touch through phone calls, participating in care planning with the nursing staff, as well as providing feedback about their older relatives' preferences and needs (Gaugler et al., 2004; Hovenga et al., 2022; Port et al., 2005).

It is well-documented that family involvement is beneficial for older people's mental and physical health (Bethell et al., 2021; Gaugler, 2005; Hovenga et al., 2022; van Corven et al., 2022). Studies also show that good interaction and relationships can be of equal importance to their family members (van Corven et al., 2022). However, few studies have focused on the benefits of social contact with institutionalised older adults from the families' perspective, and the existing literature on the topic mainly emphasises the stress and burden that next of kin experience when involved in care (Gaugler et al., 2004; Tornatore and Grant, 2002; Whitlatch et al., 2001).

While being a next of kin can be demanding, the Norwegian government describes them as an invaluable resource to both the residents and the health-care services, and are searching for new ways to support them in their efforts to combine their everyday commitments with caring for their loved ones (Ministry of Health and Care Services, 2018). Research focusing on the social needs of next of kin can provide valuable insights into how to best facilitate and support their efforts to provide care without putting their own wellbeing at risk. This article seeks to make a contribution to that field by exploring whether a communication technology called Komp can help next of kins maintain meaningful connection with their older relatives residing in LTCFs.

Studies have found that digital communication technologies can be effective in facilitating meaningful social interaction, and some technologies have even been developed with a focus on providing a sense of connection between generations (Biemans and van Dijk, 2009; Lindley, 2012; Neves et al., 2019). Access to social media, video calls and instant messaging have enabled families to stay connected beyond the boundaries of time and geographical distance (Neves et al., 2015; Waycott et al., 2022). Still, few studies have looked at how social technologies can be used to facilitate connection in LTCFs.

This article seeks to fill this knowledge gap. By analysing data from all public nursing homes in Oslo municipality, it examines (1) whether Komp can help facilitate social contact between nursing home residents and their next of kin, and (2) whether the use of Komp impacts the next of kin's subjective experience of satisfaction with this contact. Komp is a social technology developed and designed specifically to connect families with older relatives who have little to no digital experience, making it a promising intervention to implement in LTCFs. As lack of time and resources is a common issue among both health-care workers and next of kin with institutionalised relatives (Majerovitz et al., 2009), implementing a simple communication technology such as Komp can be an effective strategy to keep families connected despite the distances and demands that are built into our daily lives. The hypothesis of the present study is therefore that increased use of Komp is associated with increased satisfaction with the contact the next of kin have with the residents.

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Background

The importance of social connections

A variety of studies have established the importance of social connections for both mental and physical health, demonstrating their positive impact across all age groups (Biemans and van Dijk, 2009; Haslam et al., 2015). Satisfying one's social needs by maintaining a sense of belonging and connection with others can be of great importance in counteracting both loneliness and social isolation (Bruggencate et al., 2018; Drageset et al., 2011). Research shows that the acts of giving, sharing and showing support are some of the factors closely related to feeling a sense of connection and purpose.

The majority of research on family involvement in later life focuses on how caregivers improve the wellbeing and quality of life of older people, but it rarely looks beyond these contributions to see how maintaining social connections can benefit the family members themselves. While studies have suggested that involvement from family members in LTCFs can improve the quality of individual care provided to residents, as well as help reduce confusion and agitation among residents with cognitive decline (Gaugler, 2005; Sizoo et al., 2020), little attention has been paid to the social benefits such interaction and communication may bring to their next of kin.

The little research that is available suggests that intergenerational connection can increase the sense of wellbeing for both the younger generation and their older relatives (Davis et al., 2008). According to a recent study by van Corven et al. (2022), family care-givers of nursing home residents living with dementia reported feeling a sense of satisfaction from the interaction they had with the residents, as well as a sense of purpose from showing them support during their final phase of life. Furthermore, some family members highlighted how the interaction with the resident gave them energy and enjoyment when hearing stories from the past, but they enjoyed the interaction the most when they saw that the resident was grateful for their presence. Appreciation of the interaction and relationship was thus an important factor for both the resident and the family members to perceive the connection as meaningful and fulfilling (van Corven et al., 2022).

Being a next of kin in long-term care

A next of kin is the resident's closest living relative and is usually responsible for making decisions on behalf of the resident and advocating for their needs. Adult children of institutionalised parents often tend to take on this role (Galek et al., 2018; Keefe and Fancey, 2000; Parmenter et al., 2012). While the role of a next of kin usually varies by necessity, a study by Port et al. (2005) showed that the most common ways of staying involved were through regular visitations, taking the resident out on short trips outside the care facility, keeping in touch through phone calls and letters, as well as keeping an eye on the resident's wellbeing and care. The more care-oriented tasks, such as helping the resident eat, bathe and get dressed, and helping them to the toilet, were usually identified by the families as the nursing staff's responsibility (Cohen et al., 2014; Natan, 2009). Several studies have also documented a traditional gender distribution with women constituting the largest proportion of informal caregivers worldwide,

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although the share of men is increasing (Baker and Robertson, 2008; Calvó-Perxas et al., 2018). Notably, Dalmer et al. (2022) have observed a similar pattern of gendered care that seems to extend to the integration of new technologies within caregiving environments, where women tend to assume the additional responsibility of adopting and maintaining health and care technologies.

While the next of kin's own social needs are seldom considered to be the responsibility of the nursing staff (Nakrem and Hynne, 2017), facilitating good interactions between the resident and their next of kin can be of great importance for the social wellbeing of both parties involved (Majerovitz et al., 2009). For the next of kin, visitation can help ease their worries about their loved one receiving the care they need, but it also provides them with the opportunity to maintain and strengthen their relation by offering support and assistance. Andershed and Ternestedt (2001) suggested that meaningful participation can be facilitated if next of kin have the freedom to choose how they want to be involved in care, how much help they want from others, and if they feel they receive the support they need from the staff.

However, Klostermann and Funk (2022) shed light on how the responsibility of a next of kin is often shaped by the different ways their roles as informal carers are understood and operationalised by others, including the nursing staff. These expectations can sometimes constrict their opportunity to share the responsibility or set their own limits by saying 'no' or choosing to step back for their own wellbeing (Klostermann and Funk, 2022). Beneito-Montagut and Begueria (2021) further explore the role of technology in caregiving, focusing on how family members provide emotionally supportive care through digital means. Their work emphasises how technology can also influence and shape the way family caregivers provide emotional support, further underscoring the importance of understanding how introducing new technology into a caregiving environment can shape relationships of care.

Current study

Komp: a communication technology

This article focuses on the use of a specific communication solution called Komp, developed by Norwegian company No Isolation, which is meant to bridge the gap between older adults and their more digitally experienced families (Komp, n.d.). Komp (see Figure 1) consists of two parts: a screen with one single button that turns it on and off, and an app that is connected to the screen. Family members and friends can use the app on their phones to send pictures and short messages and make video calls directly to the owner of the screen. Komp is tailored specifically for older users with little to no digital competence; it removes the need for technical assistance from family members and health-care professionals, enabling older residents to use the device on their own.

A total of 19 public nursing homes in Oslo municipality participated in this study. Each nursing home was given the task to recruit up to 20 residents and their closest next of kin to use the communication technology. Each participating resident received their own private screen, which was placed on a flat surface in their personal room. Their next of kin were then connected to the screen through the app on their phones and were able to invite other family members and friends to join as well. Komp is advertised as a tool to facilitate safe and secure communication, meaning that only invited users can

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Figure 1. Promotion picture of Komp, used with permission by No Isolation.

send messages or photos to the device. If the screen was turned on, the resident would see photos and messages that relatives sent to the screen using the app. If the screen was off, a small light would blink to indicate that the Komp had received something new. The residents could receive but not make outgoing calls themselves, as findings during Komp's development stage showed that older adults found it too complicated to make outgoing calls and preferred to have only the option of receiving calls. The calls were automatically answered after a countdown of 10 seconds as long as the screen was turned on. If the resident wished to decline the call, they could simply turn the screen off before the countdown was over.

Technological interventions are seldom studied in LTCF settings owing to the methodological challenges of access, recruitment and ethical concerns about the vulnerability of this population (Neves et al., 2019). However, research from comparable settings and study populations offers some optimism for the adoption of such technology in LTCFs. For instance, Neves et al. (2019) studied the feasibility of a communication technology in retirement homes and found that communication technologies can be effective in fostering meaningful social contact between institutionalised older adults and their families. Similarly, Lindley (2012) demonstrated that communication technologies can provide a sense of presence and intergenerational connection by sharing pictures, text messages and drawings. This particular study uses Komp as its case to examine whether technology can be used to facilitate social connection in LTCFs. Given that Komp has no touchscreen and is designed specifically for older adults with little to no digital experience, it makes for an interesting case for this study as well as a feasible device to be tested in long-term-care settings. This study also includes a large sample size consisting of 238 participants, making it one of the few quantitative studies that examine the use of a communication technology in LTCFs at such a large scale.

The Covid-19 pandemic

It is important to note that the current study was part of a larger research project created as a response to the Covid-19 pandemic to tackle the challenges the health department in Norway was facing at the time. During the pandemic, aged-care facilities around the world implemented strict visitation bans and restrictions to keep their residents safe, preventing family members from visiting their loved ones for an extended period, as well as limiting their time with them once the restrictions eased up. For families, physical distancing and visitation restrictions meant limiting the number of visitors

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to one at a time, maintaining a minimum of one metre distance from their loved ones and avoiding any form of physical touch, including shaking hands, hugging and kissing (Bethell et al., 2021; World Health Organization, 2020). Physical distancing was the source of much anxiety, grief and severe stress for both nursing home residents and their relatives (Paananen et al., 2021), and the need for technological solutions to help residents maintain contact with their families during this time was evident.

Method

Data

This study had two objectives: (1) to examine whether the communication technology Komp can be used to facilitate social contact between residents of LTCFs and their next of kin, and (2) to examine whether Komp can increase the next of kin's experience of satisfaction with the social contact. All 19 public nursing homes in Oslo municipality participated in this project. The study population is the closest next of kin of each resident living in one of these 19 public nursing homes where the resident was testing out Komp as part of the project. This implies that only one next of kin participated for each resident in the project.

The study uses survey data collected from a total of 238 next of kin through three waves of online surveys between August 2020 and December 2021. The first wave of data, the baseline data (t_1), was collected before Komp was implemented at each nursing home to give an estimate of the frequency and satisfaction with the social contact the next of kins had with the residents before the intervention. The second wave of data (t_2) was collected two months after Komp was implemented, and the third wave of data (t_3) was collected six months after the implementation. These survey data were later combined with a second source of data – a detailed weekly data stream collected from each Komp-screen – which provided a detailed measure on how Komp was used based on information about the frequency and type of content (*e.g.* the total number of messages, pictures and video calls) sent to the residents' screen. It is important to note that this data stream did not give access to the actual messages and images sent to the Komp-screens.

For the purpose of this article, which was to see if an increase in interaction through Komp was associated with an increase in social satisfaction among the next of kin, only individuals with a combination of survey answers and data stream information were included in the analysis, providing us with data from a total of 238 next of kin at baseline (t_1). For this project, 338 Komp-screens were originally allocated to the 19 participating nursing homes, meaning that 100 participants were excluded from this study: 35 participants were excluded owing to a lack of combined survey data and datastream information, while the remaining participants either dropped out owing to the death of a resident or withdrew their participation before Komp was introduced.

Participants

The participants in this study were one of the closest next of kin of each resident living in a public nursing home in Oslo municipality where the resident was testing out Komp as part of this project. A next of kin is often the individual who has the most ongoing

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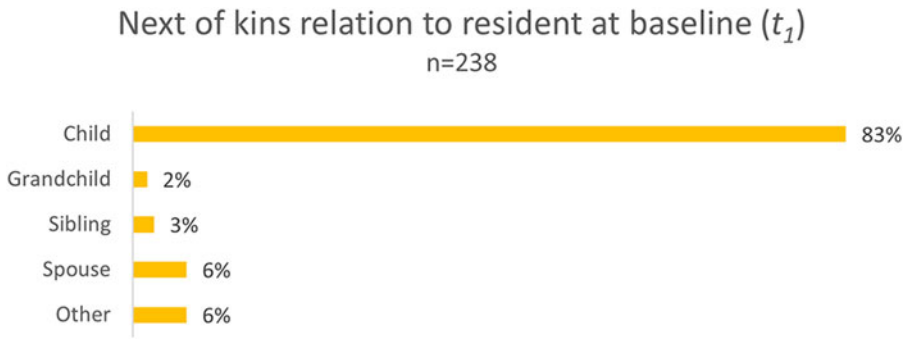

Figure 2. Overview of what relation the next of kins had to the residents.

communication with the resident on a regular basis and has distinct rights that other family members do not with regard to information, permission, access to medical data and complaints. According to the survey data collected at baseline (t_1), 83 per cent of the next of kin reported being a child of the resident, 6 per cent reported that they were the spouse of the resident and the remaining were a grandchild (2%) or a sibling (3%) or had another relation to the resident (6%). Figure 2 provides an overview of their relations.

Each nursing home had appointed one main coordinator to oversee the project details and had a small team of staff helping them with the project. The participants of this study were recruited by the main coordinator from each nursing home, who was instructed to recruit up to 20 individuals from each home. The nursing homes chose how many individuals they wanted to recruit for the project based on the capacity and resources available at each home. While some smaller homes chose to recruit only four participants for the project, other, bigger homes had the capacity to recruit up to 24 participants and were thus given additional Komp-devices if available. Furthermore, the premise for being able to participate in the research project and receiving a Komp was that the residents had to have at least one family member who could connect to the Komp from their own phone or tablet, and the participants had to answer the online surveys sent out throughout the project period. The methodological implications of both the recruitment method and the distributions of Komp-units are further discussed in the last part of this article. A LTCF is the last home for most older adults in Norway, and the average life expectancy of residents following placement is approximately two years. As a result, dropouts throughout this project were inevitably caused by a resident's death or by the next of kin withdrawing their participation once they no longer believed that the resident was fit to use Komp due to serious health issues or cognitive decline.

Variables

Although technology has enabled people to be more connected than ever before, it does not necessarily mean that they *feel* connected. Subjectively, people might still experience disconnection (Ozawa-de Silva, 2021), which is why this study examines

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the relationship between the frequency of contact and the subjective satisfaction the next of kin experience with said contact. The specific aim of this study was to examine whether Komp can be used to facilitate social contact and increase perceived satisfaction with the contact next of kin have with nursing home residents. The hypothesis of the present study is that increased use of Komp is associated with increased satisfaction with their contact.

The dependent variable in this study is the next of kin's perceived satisfaction with the social contact. This is measured using the question of how satisfied the next of kin is with the contact they have on a scale of 0–10, where 0 means 'not satisfied at all' and 10 means 'very satisfied'.

The predictor variables measure frequency of contact through Komp, which was assessed in greater detail using the data stream collected from each Komp-screen. This information is included as two continuous variables. The first variable summarises the number of messages, pictures and video calls the owner of each Komp received in total from the first day of activity (*i.e.* the day the first item was received on the Komp) until the second wave of the survey was answered (t_2). The second variable summarises all the messages, pictures and video calls each Komp owner received between the time the second survey (t_2) was answered and when the third survey (t_3) was completed.

One model also controls for three additional types of communication to investigate their potential impact on the association between social satisfaction and Komp-use. The communication types included as control variables were physical contact (*e.g.* in-person visitations), contact through phone calls and contact through other digital devices (*e.g.* computers and tablets). Physical contact, telephone contact and digital contact (aside from Komp) was measured through the online surveys using the questions '*How often do you have physical contact with the resident?*', '*How often do you talk to the resident on the phone?*' and '*How often do you have contact with the resident via computer, tablet, or similar?*', with the response options being *1 = Rarely, 2 = Once a month, 3 = Several times a month, 4 = Once a week, 5 = Several times a week* and *6 = Daily*.

The models also include a set of important demographic control variables. These variables were based on the baseline survey (t_1), which also included a set of questions about the next of kin's background, including their age, gender, education and country of birth. Age was divided into six categories with the lowest category being 18–29 years old (reference), and the oldest category being 70+ years old. The country of birth was dichotomous, with the categories being '*Born in Norway*' (reference) and '*Born in another country*'. Education was categorical with the options '*No completed education*', '*Primary school level*', '*Gymnasium/high school*', '*Higher education (up to 3 years)*' *and* '*Higher education (more than 3 years)*'. The variable was dichotomised into those who had no education at all (reference) and those who had some level of education.

Statistical analysis

Linear multiple regression was carried out to examine the relationship between social satisfaction among the next of kin and the frequency of contact they had through Komp. The analysis was modelled in three steps. First, the association between social

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satisfaction and Komp-use was estimated (Model 1). In Model 2, the demographic control variables – age, gender, education, country of origin, as well as which nursing home the participants belong to – was included, since such factors are likely to be related to both the outcome and the main predictor variable. In Model 3, other communication types such as physical contact, phone contact and digital contact were also included in the estimates. This was done in order to investigate whether the association between social satisfaction and Komp-use was affected by including other communication types.

Results

Demographics

Table 1 presents the background characteristics of all the participating next of kin in this study. A total of 238 relatives responded to the online survey during the first wave/baseline, with more than 70 per cent of them being female. Most of the respondents were children of the nursing home residents (83.19%) and more than 70 per cent were between the ages of 50 and 69. More than 95 per cent were born in Norway, while only 4.62 per cent had another country of origin. Statistics for educational level show that half of the respondents (50%) had a higher education (more than three years), while only one individual reported having no education at all.

Table 2 presents descriptive statistics for the dependent and independent variables, divided by waves. In general, we can see that most relatives had a higher mean score of social satisfaction at the third wave (7.9 on a scale of 0–10) than they did at baseline (5.2 on a scale of 0–10). The information labelled 'Communication through Komp' shows that relatives on average sent 126 messages, pictures or video calls from the time they received Komp up until the second survey was answered. The number of items sent to the Komp-screens had a slight increase four months later with a mean score of 161 messages, pictures and video calls sent to the Komp-screens. Further, we can see a small average increase in physical contact from baseline (3.5) to the third wave (3.9), which shows that the next of kin on average reported having physical contact with the residents somewhere between 'several times a month' to 'once a week'. The average communication through the phone and with the help of other digital devices such as a computer or tablet, however, seemed to decrease between baseline (phone: 3.8, digital devices: 1.6) and the third wave (phone: 3.2, digital devices: 1.3).

Social satisfaction among next of kin and frequency of contact through Komp

Table 3 presents the regression results for the association between frequency of contact through Komp and the next of kin's self-reported level of satisfaction with their overall contact. Model 1 shows the results from a bivariate regression analysis of level of satisfaction and frequency of Komp-use. Model 2 shows the relationship between level of satisfaction and Komp-use, controlled for age, gender, country of origin, education and nursing home. For next of kin, each additional message, picture or video call sent was associated with being 0.002 points more satisfied with their overall social contact with the residents. This association is adjusted for background variables, with data measured at the second wave.

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Table 1. Characteristics of the total sample

	n	%
Age group		
18–29 years	0	0
30–39 years	11	4.62
40–49 years	17	7.14
50–59 years	71	29.83
60–69 years	100	42.02
70+ years	39	16.39
Gender		
Male	71	29.83
Female	167	70.17
Education		
No completed education	1	0.42
Primary school level	19	7.98
Gymnasium/high school	46	19.33
Higher education (up to 3 years)	55	22.27
Higher education (more than 3 years)	119	50
Country of origin		
Born in Norway	227	95.38
Born in another country	11	4.62
Relation		
Child	198	83.19
Grandchild	4	1.68
Sibling	6	2.52
Spouse	15	6.30
Other	15	6.30

Table 2. Descriptive statistics for satisfaction with contact (dependent variable) and frequency of communication (independent variables) for the total sample, by wave

	Baseline (t_1)		Second Wave (t_2)		Third Wave (t_3)	
	n	*Mean (SD)*	*n*	*Mean (SD)*	*n*	*Mean (SD)*
Social satisfaction	238	5.2 *(2.60)*	229	7.4 *(2.32)*	201	7.9 *(1.99)*
Communication through Komp		–	238	126 *(153.2)*	210	161 *(353.9)*
Physical contact	238	3.5 *(1.38)*	229	3.7 *(1.24)*	201	3.9 *(1.12)*
Phone calls	238	3.8 *(1.83)*	229	3.3 *(1.92)*	201	3.2 *(1.95)*
Communication through other digital devices	238	1.6 *(1.28)*	229	1.4 *(1.20)*	201	1.3 *(0.97)*

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Table 3. Social satisfaction and frequency of communication through Komp: bivariate regression analysis (1) and multiple regression analysis (2, 3)

Association between Komp-use and level of social satisfaction among next of kin						
	(1)		(2)		(3)	
	Wave 2	Wave 3	Wave 2	Wave 3	Wave 2	Wave 3
Komp-use	0.002**	0.0008*	0.002**	0.0009*	0.001	0.0003
	(0.00098)	(0.00038)	(0.00101)	(0.00042)	(0.00106)	(0.0004)
Control variables			Demographic		Other communication types	
Adjusted R^2	2.8%	1.9%	12.7%	12.9%	14.4%	28.6%
Observations	229	201	229	201	229	201

Notes: Demographic variables included in Models 2 and 3: Age, gender, education, country of origin, nursing home. Other communication types included in Model 3: Physical contact, phone contact, other digital devices.
Significance levels: $^{*}p < 0.05$; $^{**}p < 0.01$

As we saw in Table 2, relatives on average sent 126 messages, pictures or video calls from the time they received Komp and up until the second wave, and Komp-use is therefore measured in units of 100 going forward to facilitate more accurate interpretation of the coefficient. This means that individuals who sent 100 items to Komp between start-up and the second wave are 0.2 points more socially satisfied with the contact on a scale of 0–10. When we consider this relationship adjusted for demographic variables after six months of use (Wave 3 Model 2), the strength is somewhat reduced. Now, an increase in 100 items is associated with being 0.09 points more satisfied with the overall contact.

Model 3 presents the results from the full model. Here other communication types, such as physical contact, phone contact and digital contact, are taken into account. This model allows investigating whether other communication types affect the association between social satisfaction and Komp-use. Model 3 shows that the coefficient (b) for Komp-use has a minimal decrease from 0.002 in Model 2 to 0.001 in Model 3, two months after use, when we control for other types of communication in Model 3. Similar decrease can be seen after six months of use. Although adjusting for the other types of communication does not affect the coefficient size much, the associations between Komp-use and social satisfaction are no longer statistically significant in Model 3.

Discussion

This study was conducted to examine whether the communication technology Komp can facilitate social contact between LTCF residents and their next of kin, and to see whether the use of Komp impacts the next of kin's subjective experience of satisfaction with this contact. Accordingly, it was hypothesised that increased use of Komp predicts an increased level of social satisfaction among the next of kin. The results from the regression analysis generally show a positive and significant relationship between use of Komp and increased social satisfaction, implying that Komp can indeed be a helpful tool for next of kin to maintain their social bonds with older relatives in LTCFs. This

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finding thus adds to the small but significant literature that shows that digital communication technologies can be effective in fostering meaningful social contact between institutionalised older adults and their families (Neves et al., 2019), as well as be useful tools to facilitate intergenerational communication and provide a sense of presence by enabling the sharing of pictures, text messages and drawings (Lindley, 2012).

Social connectedness perspectives suggest that sharing space and experiences together can foster a mutual sense of belonging (Bruggencate et al., 2018; Haslam et al., 2015), and the findings of this study give reason to believe that this can also apply to the shared digital space created through Komp. Komp allows families to share memories and everyday moments with their older relatives through pictures, text messages and video calls, which supports them in creating a mutual space that fosters a sense of presence and belonging. As demonstrated by the positive relationship between Komp-use and next of kin's subjective experience of social satisfaction, Komp not only helps foster such presence and connectedness but also seems to work seamlessly in LTCFs – an institution type that is typically seen as difficult to implement technologies in owing to various methodological challenges and health-related barriers (Neves et al., 2019).

A possible explanation for why Komp is a feasible intervention in LTCFs is its simple design and lack of touchscreens, which removes the need for technical assistance from healthcare workers. Not only does it provide healthcare workers with the means and opportunity to support next of kins without adding to their own workload but it also frees up time and resources so that they can allocate their attention and time to more pressing matters. Additionally, it gives the next of kin the freedom and opportunity to stay involved on their own accord; as Andershed and Ternestedt (2001) point out, next of kin having the freedom to choose how they want to be involved in care is essential to facilitating meaningful participation. However, as Dalmer et al. (2022) pointed out, it is important not to forget the invisible labour often involved in implementing and using new technologies. In the case of Komp, the nursing staff had to ensure that the devices were plugged in, that the screens were turned back on after finishing daily care tasks such as getting the residents dressed and that the device was appropriately used for each resident depending on their cognitive health and social needs (Rasmussen and Akhtar, 2022). For the next of kin, it meant taking on the task of managing the app and inviting other family members into the Komp-network. This shows that, despite Komp's simple design and its ability to foster communication in LTCFs, it is important to recognise and address the added responsibility and potential burden of managing the device and the app that is placed on the informal caregivers and the nursing staff.

Komp's ability to facilitate social connection could also be explained by the characteristics of the study population. Most of the participating next of kin were adult children of the residents, where 70 per cent were female and more than 50 per cent were between the ages of 50 and 69. These findings reflect the traditional gender stereotype commonly observed in studies of informal caregivers that women are more likely than men to take on the role of informal caregivers for their older relatives (Baker and Robertson, 2008; Swinkels et al., 2019), and the findings further imply that the traditional care patterns continue even after placement in LTCFs. The characteristics of the study population, with 70 per cent being female, further imply that the gendered division of care work seems to translate to digital care work as well. As Dalmer et al. (2022) suggested, there is an invisible labour required by health and care technologies that

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often falls on the women. The expectation of operating new devices and fulfilling the workings of the newly introduced technology to ensure appropriate care for older relatives thus often ended up becoming the female caregiver's task. However, these expectations assume a capability and willingness on the part of the informal caregiver to both take part in the traditional care work and take on the newer care responsibilities created by the new technology (Dalmer et al., 2022).

As suggested by Klostermann and Funk (2022), next of kin often have an ambiguous role following placement, yet there are certain expectations placed on the informal carers that shape and constrict their involvement and care. Women may be more likely to perceive themselves as the primary source of emotional support for their older parents or relatives and feel greater responsibilities to fulfil those roles. Competing factors such as full-time employment, family commitments and living far away from the LTCFs can affect their opportunity to visit as often as they feel they should (Gaugler, 2005), and it is common to experience feelings such as guilt for not being more present. Moreover, this draws attention to how Komp, in a specific caregiving environment such as an LTCF, can shape the way next of kin express care. Komp can, in these situations, be a useful tool to relieve some of their worries surrounding the care of their older parents, while also easing some of the guilt experienced by allowing them to be more present throughout the day through pictures, small messages or video calls. Similarly to the conclusion of Beneito-Montagut and Begueria (2021), who focused on how technology and concrete situations shape the expression of emotional care, the digitally mediated care and affection realised through short messages, pictures and video calls can be a form of caregiving, which the authors highlight as key to easing social isolation.

This brings awareness to another component that is vital for the functionality of Komp: the active family. The study by Neves et al. (2019) showed that the active involvement of a next of kin is crucial for a technology to be a feasible tool for social connectedness. As the aim of this study was to examine whether Komp can facilitate social connection, the premise for participation in the project was inevitably that the residents had to have at least one close tie that could connect to the Komp. The positive relationship observed in this study might thus not be surprising given that the residents included in the project were recruited by the coordinators at the LTCFs partially based on the criteria of '*who would get the most joy out of using Komp*', which in translation would mean recruiting those with the most active and engaging families. Certain characteristics or attitudes related to interest in technological interventions and the research project in general may thus be overrepresented or underrepresented, affecting the generalisability of the findings. However, as the main aim of this study was to examine whether Komp could be a helpful tool for next of kin to *maintain* their social contact with older residents, the methodology and recruitment method should not have significant implications for our findings. Furthermore, the findings suggest that the use of Komp seemed to increase social satisfaction among less-active families as well.

The importance of an engaged family is also emphasised by the Norwegian government, which recently released a white paper acknowledging the important work that next of kin do as informal carers of older relatives (Ministry of Health and Care Services, 2018). Next of kin are described as an invaluable resource to both the residents and the health-care services, and it is believed that the health-care services provided

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today would most likely experience a collapse or be greatly reduced without their involvement. Maintaining the level of informal care provided by next of kin is thus of upmost importance to meet the demands of the ageing population in society today. At the same time, we know that relatives who provide care are more exposed to physical and psychological ailments than the general population (Ministry of Health and Care Services, 2018). Support measures are thus necessary to relieve next of kin of some of the pressure and keep them in good health (Calvó-Perxas et al., 2018; Ministry of Health and Care Services, 2018), and the findings from this study suggest that communication technologies such as Komp can be a simple yet effective solution to support next of kin in caring for their older relatives. Not only can technology that is adapted to the needs and wishes of older adults and their next of kin be a powerful tool to nurture next of kin's own social bonds and social needs but it also gives next of kin a tool to relieve health-care workers of some of the pressure of providing residents with adequate emotional support.

Strengths, limitations and suggestions for further research

A total of 238 next of kin from all 19 public nursing homes in Oslo municipality participated in this study, making it one of the few quantitative studies that examine the use of communication technologies in LTCFs at such a broad scale. The findings of this study thus give a good basis for generalisation as most literature in this field tends to be qualitative and based on few participants. The analysis in the present study also uses a detailed weekly data stream as an objective measure of how Komp was used, based on information about the frequency and number of pictures, messages or video calls sent to each individual Komp-screen. While this provides an accurate measurement of how Komp was used by each family, it does not differentiate between the pictures, messages and video calls made by the participating next of kin and those made by the rest of the family members connected to the device. Based on the next of kin's interest in participating in the research project, it is, however, assumed that they also would be the most avid users of Komp. The dynamics of family structures – such as the number of family members involved and connected to the screen as well as the frequency of their involvement through Komp – should be taken into account in further research. While this study also briefly touches on the intersection between gendered care work and technology, it does not fully explore the nuanced dynamics at play. Further research could gain valuable insights by exploring the gender division of the invisible labour associated with technology adoption and use among caregivers. Moreover, attrition in resident, family or staff samples is often an unavoidable challenge when conducting research in long-term-care settings (Gaugler, 2005). In this study, the number of participants was reduced from 238 at baseline and second wave to 201 participants at the third wave. The empirical effects of participant drop-out, whether owing to an older relative's death or to health decline, can thus bias final results. Lastly, this study was conducted during the first year of the Covid-19 outbreak – under special circumstances where an alternative to physical visitation was highly sought after. While controlling for other types of communication showed that the relationship between Komp-use and social satisfaction still held, although no longer significant, it would be

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interesting for future research to look at the use of Komp in LTCFs under more normal circumstances.

Conclusion

This study shows that the communication technology Komp can effectively facilitate social contact between LTCF residents and their next of kin, while also positively impacting the next of kin's subjective experience of satisfaction with this contact. The findings support the notion that digital communication technologies can play a significant role in fostering meaningful social connections between institutionalised older adults and their families. Komp allows families to share memories and everyday moments through pictures, text messages and video calls, creating a shared digital space that fosters a sense of presence and belonging. Furthermore, the study emphasises the importance of supporting next of kin as informal caregivers, recognising their invaluable contribution to the wellbeing of LTCF residents and the health-care system as a whole. Communication technologies like Komp can provide a simple yet effective solution to support next of kin in caring for their older relatives, while also alleviating the pressure on health-care workers in providing emotional support.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S0144686X25000054.

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Competing interests. The author declares no competing interests.

Ethical standards. The study was reported to Sikt – the Norwegian Agency for Shared Services in Education and Research (IRB no. 406771). There was no need for approval for this study from the Regional Committees for Medical and Health Research Ethics (REK), and study participation is based on informed consent.

References

Andershed B and Ternestedt B-M (2001) Development of a theoretical framework describing relatives' involvement in palliative care. *Journal of Advanced Nursing* **34**, 554–562. https://doi.org/10.1046/j.1365-2648.2001.01785.x.

Baker KL and Robertson N (2008) Coping with caring for someone with dementia: Reviewing the literature about men. *Aging and Mental Health* **12**, 413–422. https://doi.org/10.1080/13607860802224250.

Beneito-Montagut R and Begueria A (2021) 'Send me a WhatsApp when you arrive home': Mediated practices of caring about. In Peine A, Marshall B, Martin W and Neven L (eds.), *Socio-gerontechnology: Interdisciplinary Critical Studies of Ageing and Technology*. Abingdon: Routledge, pp. 119–132.

Bethell J, Aelick K, Babineau J, Bretzlaff M, Edwards C, Gibson J-L, Hewitt Colborne D, Iaboni A, Lender D, Schon D and McGilton KS (2021) Social connection in long-term care homes: A scoping review of published research on the mental health impacts and potential strategies during Covid-19. *Journal of the American Medical Directors Association* **22**, 2. https://doi.org/10.1016/j.jamda.2020.11.025.

Biemans M and van Dijk B (2009). Food for talk: Photo frames to support social connectedness for elderly people in a nursing home. In Norros L, Koskinen H, Salo L and Savioja P (eds.), *Proceedings of ECCE '09: European Conference on Cognitive Ergonomics: Designing Beyond the Product – Understanding Activity*

and User Experience in Ubiquitous Environments. Otaniemi: VTT Technical Research Centre of Finland, article 15, pp. 1–8.

Bruggencate TT, Luijkx KG and Sturm J (2018) Social needs of older people: A systematic literature review. *Ageing & Society* **38**, 1745–1770. https://doi.org/10.1017/S0144686X17000150.

Calvó-Perxas L, Vilalta-Franch J, Litwin H, Turró-Garriga O, Mira P and Garre-Olmo J (2018) What seems to matter in public policy and the health of informal caregivers? A cross-sectional study in 12 European countries. *PLoS (Public Library of Science) One* **13**, e0194232. https://doi.org/10.1371/journal.pone.0194232.

Cohen LW, Zimmerman S, Reed D, Sloane PD, Beeber AS, Washington T, Cagle JG and Gwyther LP (2014) Dementia in relation to family caregiver involvement and burden in long-term care. *Journal of Applied Gerontology* **33**, 522–540. https://doi.org/10.1177/0733464813505701.

Dalmer N, Ellison K, Katz S and Marshall B (2022) Ageing, embodiment and datafication: Dynamics of power in digital health and care technologies. *International Journal of Ageing and Later Life* **15**, 77–101. https://doi.org/10.3384/ijal.1652-8670.3499.

Davis H, Vetere F, Francis P, Gibbs M and Howard S (2008) 'I wish we could get together': Exploring intergenerational play across a distance via a 'Magic Box'. *Journal of Intergenerational Relationships* **6**, 191–210. https://doi.org/10.1080/15350770801955321.

Drageset J, Kirkevold M and Espehaug B (2011) Loneliness and social support among nursing home residents without cognitive impairment: A questionnaire survey. *International Journal of Nursing Studies* **48**, 611–619. https://doi.org/10.1016/j.ijnurstu.2010.09.008.

Ekström K, Spelmans S, Ahlström G, Nilsen P, Alftberg Å, Wallerstedt B and Behm L (2019) Next of kin's perceptions of the meaning of participation in the care of older persons in nursing homes: A phenomenographic study. *Scandinavian Journal of Caring Sciences* **33**, 400–408. https://doi.org/10.1111/scs.12636.

Galek J, Simonsen M, Grov E-K and Sandvoll A (2018) Besøk på sykehjem. En kvantitativ studie av sykehjemsbeboeres besøkshyppighet. *Nordisk Tidsskrift for Helseforskning* **14**. https://doi.org/10.1111/scs.12636.

Gaugler JE (2005) Family involvement in residential long-term care: A synthesis and critical review. *Aging and Mental Health* **9**, 105–118. https://doi.org/10.1080/13607860412331310245.

Gaugler JE, Anderson KA, Zarit SH and Pearlin LI (2004) Family involvement in nursing homes: Effects on stress and well-being. *Aging and Mental Health* **8**, 65–75. https://doi.org/10.1080/13607860310001613356.

Haslam C, Cruwys T, Haslam SA and Jetten J (2015) Social connectedness and health. In Pachana N (ed.), *Encyclopedia of Geropsychology*. Singapore: Springer, pp. 1–10. https://doi.org/10.1007/978-981-287-080-3_46-2.

Hovenga N, Landeweer E, Zuidema S and Leget C (2022) Family involvement in nursing homes: An interpretative synthesis of literature. *Nursing Ethics* **29**, 1530–1544. https://doi.org/10.1177/09697330221085774.

Keefe J and Fancey P (2000) The care continues: Responsibility for elderly relatives before and after admission to a long term care facility. *Family Relations* **49**, 235–244. https://doi.org/10.1111/j.1741-3729.2000.00235.x.

Klostermann J and Funk L (2022) More than a visitor? Rethinking metaphors for family care in long-term care homes. *Ageing & Society* **44**, 2065–2088. https://doi.org/10.1017/S0144686X22001271.

Lindley SE (2012) Shades of lightweight: Supporting cross-generational communication through home messaging. *Universal Access in the Information Society* **11**, 31–43. https://doi.org/10.1007/s10209-011-0231-2.

Majerovitz SD, Mollott RJ and Rudder C (2009) We're on the same side: Improving communication between nursing home and family. *Health Communication* **24**, 12–20. https://doi.org/10.1080/10410230802606950.

Ministry of Health and Care Services (2018) Meld. St. 15 (2017–2018) [Stortingsmelding]. regjeringen.no. Available at www.regjeringen.no/no/dokumenter/meld.-st.-15-20172018/id2599850/ (accessed 20 February 2025).

Nakrem S and Hynne AB (2017) Pårørende en betinget ressurs? En kvalitativ studie av pårørende til langtidsbeboere i sykehjem sine erfaringer av egen rolle. *Tidsskrift for Omsorgsforskning* **3**, 165–175. https://doi.org/10.18261/issn.2387-5984-2017-03-02.

Natan MB (2009) Coordinating the roles of nursing home staff and families of elderly nursing home residents. *Journal of Nursing Care Quality* **24**, 332–339. https://doi.org/10.1097/NCQ.0b013e3181a8b257.

Neves BB, Franz R, Judges R, Beermann C and Baecker R (2019) Can digital technology enhance social connectedness among older adults? A feasibility study. *Journal of Applied Gerontology* **38**, 49–72. https://doi.org/10.1177/0733464817741369.

Neves BB, Franz RL, Munteanu C, Baecker R and Ngo M (2015). 'My hand doesn't listen to me!': Adoption and evaluation of a communication technology for the 'oldest old'. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. New York: Association for Computing Machinery, pp. 1593–1602. https://doi.org/10.1145/2702123.2702430.

Komp (n.d.). *Komp*. Available at https://komp.family/en/ (accessed 20 February 2023).

Ozawa-de Silva C (2021) *The Anatomy of Loneliness. Suicide, Social Connection, and the Search for Relational Meaning in Contemporary Japan*. Oakland: University of California Press.

Paananen J, Rannikko J, Harju M and Pirhonen J (2021) The impact of Covid-19-related distancing on the well-being of nursing home residents and their family members: A qualitative study. *International Journal of Nursing Studies Advances* **3**, 100031. https://doi.org/10.1016/j.ijnsa.2021.100031.

Parmenter G, Cruickshank M and Hussain R (2012) The social lives of rural Australian nursing home residents. *Ageing & Society* **32**, 329–353. https://doi.org/10.1017/S0144686X11000304.

Port CL, Zimmerman S, Williams CS, Dobbs D, Preisser JS and Williams SW (2005) Families filling the gap: Comparing family involvement for assisted living and nursing home residents with dementia. *Gerontologist* **45**, 87–95. https://doi.org/10.1093/geront/45.suppl_1.87.

Rasmussen EB and Akhtar S (2022) *Enkel og trygg pårørendekontakt: Forskningsrapport fra et pandemiprosjekt om bruk av sosial teknologi for eldre på langtidshjem*. Skriftserien No. 4. Oslo: OsloMet.

Sizoo EM, Monnier AA, Bloemen M, Hertogh CMPM and Smalbrugge M (2020) Dilemmas with restrictive visiting policies in Dutch nursing homes during the Covid-19 pandemic: A qualitative analysis of an open-ended questionnaire with elderly care physicians. *Journal of the American Medical Directors Association* **21**, 1774–1781. https://doi.org/10.1016/j.jamda.2020.10.024.

Swinkels J, Tilburg TV, Verbakel E and Broese van Groenou M (2019) Explaining the gender gap in the caregiving burden of partner caregivers. *Journals of Gerontology: Series B* **74**, 309–317. https://doi.org/10.1093/geronb/gbx036.

Tornatore JB and Grant LA (2002) Burden among family caregivers of persons with Alzheimer's disease in nursing homes. *Gerontologist* **42**, 497–506. https://doi.org/10.1093/geront/42.4.497.

van Corven CTM, Bielderman A, Lucassen PLBJ, Verbeek H, Lesman-Leegte I, Depla MFIA, Stoop A, Graff MJL and Gerritsen DL (2022) Family caregivers' perspectives on their interaction and relationship with people living with dementia in a nursing home: A qualitative study. *BMC (BioMed Central) Geriatrics* **22**, article 212. https://doi.org/10.1186/s12877-022-02922-x.

Waycott J, Zhao W, Kelly RM and Robertson E (2022) Technology-mediated enrichment in aged care: Survey and interview study. *JMIR (Journal of Medical Internet Research) Aging* **5**, e31162. https://doi.org/10.2196/31162.

Whitlatch CJ, Schur D, Noelker LS, Ejaz FK and Looman WJ (2001) The stress process of family caregiving in institutional settings. *Gerontologist* **41**, 462–473. https://doi.org/10.1093/geront/41.4.462.

World Health Organization (2020) Infection prevention and control guidance for long-term care facilities in the context of Covid-19: Interim guidance, 21 March 2020. https://apps.who.int/iris/handle/10665/331508

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