Peer Review on "Improving reconciliation of work and long-term care"

Host Country Discussion Paper - Germany

Germany, 24-25 September 2018

DG Employment, Social Affairs and Inclusion

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DG Employment, Social Affairs and Inclusion

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Executive summary

In Germany, there is an increasing number of people in need of long-term care.[1] Most of them are being cared for at home and by close relatives. Thus, reconciliation of work and care is of an increasing importance. Most of the carers are female and working, aged between 45 and 64 years and bear the only responsibility for the family member in need of long-term care. There is great willingness of close relatives to get actively involved in providing care and to integrate these responsibilities within their everyday life. This enables many people in need of long-term care to remain in their familiar environment for as long as possible.

The legal framework in Germany already offers several leave arrangements for informal carers when it comes to long-term care. In case a relative suddenly needs support at short notice, employees may stay at home and take care of their relative for up to 10 working days. In addition, the Caregiver Leave and the Family Caregiver Leave allow carers to stop working for up to six months (total or partial release), or respectively, for up to 24 months (partial release from work). According to German law, a Carer's grant is offered during short-term absence and carers are entitled to an interest-free loan during Caregiver Leave or Family Caregiver Leave. Despite the latest reforms and the fact that a range of measures have been established by individual companies to facilitate their employees' work-life-balance, many employees are still unsatisfied when it comes to the reconciliation or work and care. Besides leave or other working time arrangements, a broad majority pleads for financial support.

The report by the Independent Advisory Board on Reconciliation of Work and Care, planned to be published by June 2019, will therefore be of high importance when it comes to enhance the existing legal framework. Furthermore, a broad and multilateral discussion process involving the Independent Advisory Board and the social partners should be started, also considering gender equality and a more equal sharing of care between men and women.

[1] For more information on the German long-term care system: http://ec.europa.eu/social/BlobServlet?docId=18962&langId=en

1 Situation in the host country

1.1 People in need of long-term care in Germany – basic facts and figures

The reconciliation of work and long-term care becomes increasingly important. According to surveys, one out of four citizens is affected by long-term care, either by caring for a relative or by knowing someone else fulfilling this duty. These findings are confirmed in a recent company survey: In a snap poll 85% of all companies confirmed that reconciliation of work and care is of (major) importance. According to key data from the 2015 long-term care statistics, a total of nearly 2.9 million people were in need of long-term care. The large majority of them are being cared for at home (73% or 1.38 million), mostly without any mobile, formal care services (Statistisches Bundesamt, 2016). Due to a redefinition of legal entitlements as well as related thresholds and needs assessment methods the total number of people in need of long-term care increased to 3.5 million by December 2017. It is estimated that by 2019 there will be approximately 4.5 million family caregivers in total, 2.8 million of which being of working age. The main characteristics of family caregivers are:

- More than 70% of all carers are female (Pflegereport, 2017);
- 50% of the family caregivers are aged between 45 und 64 years;
- Family caregivers often face time constraints, financial burdens, emotional stress, physical impairments and social constraints;
- A study conducted by the Hans Böckler-Stiftung (Hans Böckler Foundation) points out that in one out of five cases there is only one family caregiver who bears all the responsibility. However, this seems slightly to change (Hielscher et al., 2017).

1.2 Reconciliation of work and care duties

The widespread willingness of close relatives to actively provide care and to integrate these responsibilities within their everyday life allows that many people can remain in their familiar environment for as long as possible. According to data deriving from the German Centre of Gerontology (Deutsches Zentrum für Altersfragen/DZA) almost two thirds of family caregivers at working age are actually employed. In 2016 28% of them worked full-time, 36% had part-time contracts or were marginally employed (low monthly income which is not liable to income tax), while about 35% have stopped working or did not work at all (Tesch-Römer & Hagen, 2018). According to a survey among human resource managers they are broadly engaged in helping employees to find arrangements for reconciling work and care. Only in some very rare cases employees who made use of the legally guaranteed leave arrangements expressed their concern about cases of mobbing or other sanctions by their employer (evaluation study by INTERVAL). Nevertheless, almost one third of working carers report that they (very) often encounter problems when reconciling work and care, in particular women working full time. In a survey conducted by IG Metall (trade union of steel-workers) employees have been asked which measures would be of major importance for a better life-work-balance with respect to long-term care: 62% of all female and almost 64% of male employers with relatives being in need of long-term care agreed that they would like to work less, but could not afford to reduce their working hours. Employees with caring responsibilities are clearly more dissatisfied with their working arrangements than others. For them it is very important to have a reliable working scheme with a very clear beginning and end of the daily working hours, while flexible working arrangements at short notice seem to be less important (Allmendinger & Haarbrücker, 2017). In addition, a survey showed that a broad majority of 84% of family carers pleaded for public financial support (KANTAR EMNID, 2017). This result was confirmed by an evaluation study by INTERVAL (2017).

2 Policy measure

There are two different laws in Germany to foster better reconciliation of work and care: the "Pflegezeitgesetz" (Caregiver Leave Act) entered into force in 2008 and the "Familienpflegezeitgesetz" (Family Caregiver Leave Act) dates from 2012. With the "Gesetz zur besseren Vereinbarkeit von Familie, Pflege und Beruf" (Law on better reconciliation of family, work and long-term care) which entered into force 1st January 2015) the two laws have been merged and further developed. Basically, the legal system in Germany consists of three pillars:

- If a family member suddenly needs support at short notice, close relatives may stay away from work for up to ten working days in order to organise appropriate care or to ensure the provision of long-term care during this time. Since 2015 they have the right to a wage compensation benefit – the Carer's Grant – which is limited up to ten working days.
- "Pflegezeit" (Caregiver Leave) means that employees have the right to a complete or partial release from work for up to 6 months in order to care for a close relative in need of long-term care at home. During this time they may request an interest-free loan from the "Bundesamt für Familie und zivilgesellschaftliche Aufgaben" (Federal Department for Family and Civil Society Affairs) in order to cushion the loss of income during this time.
- If close relatives are in need of long-term care for a longer time, reconciling care and work can become a challenge for many families. Therefore, carers are entitled to "Familienpflegezeit" (Family Caregiver Leave), a legal claim to partial release from work for up to 24 months with a minimum working time of 15 hours per week. Entitled persons can also request support by means of an interest-free loan.

It is also possible to apply for a complete or partial release from work for up to 6 months or a partial release for up to 14 months to care for a child in need of long-term care, even if care is not provided at home, but in a residential setting. During the last phase of life of a close relative, employees are allowed to take time off partly or completely for up to three months. The definition of "close relative" entails grandparents, parents, parents-in-law, step-parents, spouses, life partners, partners in a civil partnership or cohabiting partners, siblings, brothers-in-law and sisters-in-law, children, adopted or foster children, adopted or foster children of the spouse or life partner, stepchildren and grandchildren.

Entitlements for the different leave regulations vary according to the size of the enterprise: whereas the right to short-term absence from work and Carer's Grant apply to all employers irrespective of the size of the company, a legal claim to "Pflegezeit" (Caregiver Leave) is not granted in companies with 15 or less employees. According to the Family Caregiver Leave Act there is no legal claim against employers with 25 employees or less, excluding employees undergoing vocational training. Differences also exist regarding periods of notice (10 working days, 8 weeks, 3 months).

The Family Caregiver Leave Act also established an 'Independent advisory board on reconciliation of work and long-term care' (*Unabhängiger Beirat für die Vereinbarkeit von Pflege und Beruf*). The Board consists of 21 members representing interest groups, welfare associations, senior citizens' organizations, the statutory and private long-term care insurances, trade unions, associations of employers and trade unions, as well as representatives of the "Bundesländer" (federal states) and the municipalities (Kommunen). The main tasks of this Advisory Board are to monitor the implementation and efficacy of the new regulations, to further discuss questions of reconciliation of work and long-term care und to submit a report to the Federal Ministry every four years. The first report will be due by 1st of June 2019 and will be of major importance to enhance the legal framework.

3 Results

According to a scientific evaluation study (INTERVAL 2017), the legal amendments are broadly accepted. For instance, a majority of about 52.6% of the respondents think that the legal regulations make a very large or major contribution to better reconcile work and care. This was confirmed by a poll which had been conducted prior to the evaluation (KANTAR EMNID, 2015): six out of seven employees would consider a leave arrangement to take care for a close relative. For almost nine out of ten employees the legal claim to Family Caregiver Leave is useful and reasonable.

However, since there is no statutory duty to report the take-up of Caregiver Leave and Family Caregiver Leave, official data is not available. According to a survey conducted in 2016 it is estimated that about 70,000 people used the care leave from January 2015 to August 2016. An analysis of the Micro census has been envisaged and will hopefully provide for more reliable data. As to the financial support for carers via the Carer's Grant (*Pflegeunterstützungsgeld*) it is assumed that there are between 9,000 and 13,000 cases per year. The take-up of the financial support for carers via an interest-free loan is much lower: Since its introduction on 1st of January 2015, there have only been 921 applications und 738 approvals. In addition, there have been cases of delayed payment, and difficulties also arose due to the different scope of application for the entitlements to Caregiver Leave or Family Caregiver Leave as well as to the varying periods of notice. It is therefore not surprising that current political debates are about replacing the interest-free loan by a general Care Allowance.

When discussing further improvements regarding the reconciliation of work and care in Germany, a generally enhanced financial support for family carers should be considered. Gender equality and a more equal distributions of care responsibilities in long-term care also have to be addressed. With regards to a possible stop of the interest-free loan for carers, there are three types of financial aid being discussed:

- According to the 'budget model' ("*Budgetmodell*") employees should get entitled to a flexible time budget of working hours or working days (with wage compensation) to be able to fulfill care responsibilities;
- Different 'wage compensation models' ("*Lohnersatzmodelle*") have been proposed with related variations regarding the length and amount of payment;
- Models offering a fixed amount of working time per month ("*Festbetragsmodelle*") during care leave periods are based on the idea that this amount should in no way be related to the total number of working hours or the actual need of long-term care of the close relative.

4 Key findings and conclusions – the role of digitalisation

Due to the increasing number of people in need of long-term care, questions of reconciliation of work and long-term care are getting increasingly important. By the end of December 2017, 3.5 million people in need of long-term care were living in Germany. Most of them are being cared for at home without using formal care services. The majority of family carers are female. Future reforms therefore need to be driven by the principles of gender equality and a more equal distribution of family care.

The recent legal amendments of the Caregiver Leave Act and the Family Caregiver Leave Act facilitated the reconciliation of work and care. Related provisions are broadly accepted by carers and within the public. Data shows that carers particularly use their entitlements for absence from work in situations occurring at short-notice (and the related Carer's Grant). This applies to a lower degree to the Caregiver Leave and the Family Caregiver Leave as well as to the take-up of the interest-free loan that remained far behind expectations. Therefore, several models for a Care Allowance are currently being discussed.

To conclude, it should be noted that the ongoing digitalisation might also offer new opportunities for a better balance between work and care provided by family carers. The widespread use of smartphones and the Internet as well as the use of information and communication technology at the workplace – affecting more than 80% of all employees in Germany – offers potentials of new types of working from home with more flexible working hours. Furthermore, the reconciliation of family and work (including care and work) is important for nine employees out of ten. It is therefore also up to the companies to offer more flexibility of working hours and working place. Companies in which such arrangements were facilitated reported a significantly higher job satisfaction of employees (Hammermann & Stettes, 2016).

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Further information regarding legal regulations: www.wege-zur-pflege.de

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Host Country Discussion Paper - Germany

Long-distance caregiving

Germany, 24-25 September 2018

DG Employment, Social Affairs and Inclusion

Written by Prof. Dr. Annette Franke

September, 2018

1 Background

In Germany, about 73 % of all people in need of care are supported at home by their relatives – mostly by the female family members (Statistisches Bundesamt, 2017). In addition, seven out of ten informal carers are still active in the labour market (Statistisches Bundesamt, 2014). As social policy tends to drive care responsibilities back to the families, working carers living far away are often confronted with a lack of professional care services, and complex and somewhat less transparent legislation. Family members, who take care of an older relative, are also still often associated with retired or (temporarily) unemployed people living in the same household or at least close by. However, in most European countries labour market mobility and changing family patterns are increasing while the number of family carers in close proximity decreases. For example, data from the Survey of Health, Ageing and Retirement in Europe (SHARE) indicates that in 15-30 % of all cases, the own mother lives more than 100 kilometres away (Franke et al, 2018). In this context, it can also be assumed that a number of European citizens have a national but in some cases also a cross-border long distance to overcome. So far, the topic of reconciliation of work and care for a relative living far away is still marginally discussed – as well as on the scientific, political, and enterprise level. One major reason for the still existing lack of attention might be due to the definitional fuzziness of 'long-distance' and 'care'. However, in the course of demographic dynamics, increased labour market mobility, the increase of chronic diseases with unpredictable events, and changing family patterns (single-parent families, living-apart-together) caring for a family member far away becomes more of a challenge (Engstler and Huxhold, 2010; Franke et al, 2018; MetLife and NAC, 2004). Unresolved questions relate in particular to challenges for distance carers and implications for family relationships, social networks and wellbeing of distance carers. It is also still unknown what kind of strategies, technologies and instruments on the political and enterprise level are most effective in order to foster long-distance care arrangements and carers' workplace continuity.

2 Characteristics of distance care-arrangements

According to the current literature (mainly from the U.S.), distance carers[2] are predominately female, married with children, belong to the age group 40-50 years and report a high socio-economic status (Bledsoe, Moore and Collins, 2010; Douglas et al, 2016; Koerin and Harrigan, 2003; MetLife and NAC 2004; Wagner, 1997; Watari et al, 2006). However, the group of 'distance carers' shows a higher proportion of male carers compared with family carers living nearby – possibly due to their main function as 'secondary caregivers' from the distance (MetLife and NAC 2004). Distance carers provide a lower amount of hands-on care (10h/week vs. 3-6/day as proximate carers) but perform typical care tasks from far away, such as monitoring care, management care, emotional care and motivation (Franke et al, 2018). This leads over to the question of a broader definition of 'care' beside 'hands-on'-care, which acknowledges also emotional and cognitive dimensions of help. Care recipients are mostly parents and/or parents-in-law, supported by their own children living far away. According to the MetLife Study, one third of the distance carers also get help from other siblings or other close relatives as well as from their own spouses. Professional help and help from friends or neighbours are also important for local support (Jähnke and Bischofberger, 2012; Phillips, Bernard and Chittenden, 2002). The findings therefore highlight the social embeddedness of distance care-arrangements. According to the MetLife study long-distance carers need on average 724 kilometres (450 miles) and 7,23 hours for one way between their home place and the place of the care receiver, which leads to additional costs for travelling about on average $392/month (MetLife and NAC 2004). In the context of proximity, differences between rural and urban regions become visible. As in rural areas still a number of multigenerational

[2] Most common definition: One hour travelling at least (MetLife and NAC 2004).

households exist, urban areas are dominated by single or double households among older persons. Even if informal help appears to be more available in the rural area, the literature revealed the lack of infrastructure and formal care services in return. However, a number of rural areas are facing long lasting consequences due to the emigration of younger people, which follows to a decreasing source of potential caregivers (Kutzner and Gerlinger, 2018).

If working carers have to overcome long distances on a regular basis, they often experience particular stress – especially when accompanied with inflexible working conditions and working overtime – as well as additional costs for travelling. On the other hand, some distance can also be a source for privacy and emotional distraction, which carers living in the same household disclaim. According to a study from the Robert-Koch-Institute, caregivers who care at least 2 hours per day report twice as low levels of social support compared to non-carers in the same age. The most reported burden and health issues of informal carers are back pain, fatigue, sleeping problems, limb pain and depressions (Wetzstein, Rommel and Lange, 2015). In addition, female carers with a high amount of care are more likely to smoke and show a lower level of physical activity (ibidem). This burden depends on the care level, the age of the carer, the duration of care and social support. Sharing the home with the care recipient is also often seen as one of the most important factors of burden as the caregivers indicate less time for their private life. Distance carers therefore seem to have less impact on physical health and self-reported general health status, but results indicate high level of stress (Franke et al, 2018). On the one side, geographical and physical distance allows private retreat and better conditions for health behaviour (sleep, leisure, physical activity). On the other hand, lack of control and trust (for example regarding the local support network or professional helpers), feeling of guilt, no time for holidays, too much commuting, traveling costs and constant concern about the care situation and worries about the future affect the quality of life and wellbeing for distance carers in a negative way. Mental strain can also become visible at the workplace, namely via absenteeism, sick leave, working time reduction, less time for business traveling, lack of concentration, and productivity loss (Franke et al, 2018; MetLife and NAC, 2004). In addition, specific measures and instruments at the workplace to enable the combination of work and long-distance care are not at the top of employers' agenda and are often considered to be a private issue. However, many (especially large) companies and also the civil service tend to offer different instruments – like flexible working time or homework – even when only partly understanding the significance of caring for a relative not living nearby. For example, it should also be kept in mind that for carers who want to support their loved ones from a distance, free blocks of days are more helpful than starting work later or leave earlier. In this context long-distance carers are less likely to reduce their working time: Only 3% shift from full- to part time (MetLife and NAC, 2004). At work as well as at home, (new) technologies have the potential to support health professionals, patients, and family caregivers to manage the geographical distance and to ease safety concerns by smart utilisation of these (new) technologies. In the meanwhile, a wide range of tools for communication, monitoring, tele-working and Ambient Assisted Living have been developed, which bear the potential as innovative solutions for care issues and working carers. Tablets or video calls for example can be used to enable communication between relatives or local helpers living far away and provide the feeling of belonging and safety. However, there are still barriers for using technology in terms of network coverage, usability, financial costs and ethical aspects, which have to be considered (Kramer, 2014; Magnusson, Hanson and Nolan, 2005; Seifert, Doh and Wahl, 2017).

3 Conclusion

Long-distance caregiving can be seen as one pioneer dimension of intergenerational help and solidarity in modern ageing societies. Distance carers provide a wide range of

instrumental and emotional help, motivation, coordination and management of care. However, care from a geographical distance has so far received little attention in the context of balancing work and family life. For the future, there will be both a need to develop policies and service provision to better facilitate the reconciliation of work and care, e.g. flexible working conditions, measures to facilitate returning to the labour market, integrated networks of all important actors involved in care, accessible and reliable low threshold care services, tele-care support systems, and societal support in terms of voluntary work. In addition, both working distance carers and people in need for care need more social protection and personalised schemes regarding cash benefits. To contribute to the idea of 'ageing in place', social policy is asked to improve obligations for alternative forms of housing and multidimensional local support networks in terms of caring communities and organisational structures for intersectoral cooperation. In addition, social policy is asked to increase the general attention on this issue with an emphasis on intergenerational solidarity and equal gender opportunities to maintain an adequate work-life balance.

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Host Country Discussion Paper - Germany

Assistive technologies supporting informal care

Germany, 24-25 September 2018

DG Employment, Social Affairs and Inclusion

Written by

Prof. Dr. Barbara Klein

1 Current and future developments

1.1 Innovative assistive technologies supporting informal carers

Today new technologies provide a huge potential in all areas of life and also in the provision of healthcare. Here assistive technologies are viewed as one of the possibilities to tackle the impact of an aging population. The World Health Association (WHO) defines assistive technologies as "an umbrella term covering the systems and services related to the delivery of assistive products and services", which "maintain or improve an individual´s functioning and independence, thereby promoting their well-being"[3]. In Germany assistive technologies are a service provided by the health and/orcare insurance. Rehadat, a service and internet-platform by the Cologne Institute for Economic Research and funded by the Federal Ministry of Labour and Social Affairs, informs about ca. 13,000 assistive products by produced by 2,600 manufacturers, their application areas, finance, legal issues and literature.[4] Besides this already existing range of products the fast technological development results in a vast offer of new assistive products that could be utilized but may not be covered by the health and/or care insurance.

The utilization of assistive technologies depends on a variety of factors and has to be viewed in the context of the specific care arrangements and socio-technical system. Especially, designing the potential of assistive and innovative technologies requires taking into account the socio-technical system in order to achieve utmost benefits. When looking at the situation of informal carers the following factors play a major role:

- His/her personal situation such as age, degree of relationship, life and work situation, socio-economic status etc.
- The personal situation of the person in need of care such as age, health condition, degree of care needed, life situation, housing conditions, socio-economic conditions etc.
- Assistive technologies and technical aids, their availability, their adaptation to needs, appropriate training of the person in need of care and the informal carer.

COFACE Families Europe has undertaken an online survey directed to the situation of informal carers with 1,160 persons from 17 countries responding. Looking at the needs of informal carers, this study showed that major problems of the life situation of informal carers impact on professional and personal life, access to community-based services, financial constraints, health issues and administration problems (Birtha, Holm 2017, p. 59). "A lack of time for their own needs, the difficulty of reconciling family, job and care [,] isolation and financial problems" (Reinschmidt 2018, p. 12) are a challenge to coping with their life situation.

The need of care depends very much on functional loss and health status. Care needs described in MuG III[5] (Schneekloth, Wahl 2005) show that, besides nursing care, assistance in activities of daily living such as washing/bathing, dressing, personal hygiene and eating and drinking is required. Domestic assistance also plays a major role, such as shopping, cleaning tasks, preparing meals and finances.

Khosravi and Ghapanchi's (2016) research on effectiveness of assistive technologies identified in a systematic literature review eight key areas of older adult's problems

[3] http://www.who.int/en/news-room/fact-sheets/detail/assistive-technology (accessed: 13.08.2018)
[4] https://www.rehadat-hilfsmittel.de/en/ (accessed: 13.08.2018)
[5] MUG III is a study on the possibilities and limitations of independent living in the private home (Möglichkeiten und Grenzen selbstständiger Lebensführung in Privathaushalten) which was funded by the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth.

which were looked at by research. These were wellbeing, social isolation, chronic disease, dependent living, falls, dementia, medication management, depression.

Assistive technologies developed, piloted or used in these studies were information and communication technologies, robotics, sensor technologies, video games, medication dispensing devices and telemedicine (Khosravi, Ghapanchi 2016). Rather than a certain product, telemedicine is a socio-technical arrangement with specific service provision using sensor-based technologies.

Characteristics of innovative technological developments in the healthcare sector are that they are continuously getting miniaturized, more functions get integrated and new materials are used, thus, clear distinctions and categorizations of technology are getting more and more blurred. An example is the smartphone which is not only a telephone device, but integrates a variety of functions such as a personal computer, camera, CD, video-player and recorder, navigation system, dictaphone, healthcare functionalities such as heart beat or oxygen monitoring, etc. and a diversity of other applications.

Looking at the situation of the socio-technical system of informal care the following questions arise:

1. Which kind of assistive technologies are available or being developed to support informal care?

2. What role can these assistive technologies play in supporting informal carers and their relative in need of care?

3. What are ethical, legal and technological issues?

Technologies supporting care

The following table gives an overview of the care activities for people in need of care and potential technological or service support.

Care activities for persons in need of care (1)	**Average hours per week needed for care activities(1)**	**ICT: PCs, Smartphones, Internet, Apps**	**Sensor technologies**	**Robotics**	**Video games**	**Supplementary services**
Assistance on activities related to meals	8,5	Youtube support in preparing meals; refridgerator connected to the internet with automized order and delivery, etc.	Smart home technologies such as monitoring of oven, auto power off functions for the oven; intelligent cups, plates, etc.	Robotic kitchen, humanoid robots supporting fetch and carry tasks	Tutorials for meal preparation, etc.; serious games for exercising these tasks and mental stimulation	Meals on wheels, foodbanks and similar initiatives
Domestic assistance	7,7	Reminders; mirror with instructions for specific tasks e.g. teeth brushing	Fridge with internet possibilities to order food; intelligent washing machines, dryers etc.; smart home, smart metering	Robotic vacuum, floor, or window cleaner	Tutorials for housework tasks, serious games	Cleaning services
Nursing care sercices	5,5	Healthcare apps	Health care technologies such as monitoring of medication intake utilizing sensor based health care products; smart shirts measuring vital parameters, etc.; washlets	Robotic beds, wheelchairs, exoskeletons, for the person in need of care/ exeskeletons for informal carer supporting transfer tasks	Serious games / tutorials	Telecare, telehealth
Day structuring measures	2,1	Entertainment, diary apps, instant messaging services	Reminders, virtual, intelligent speech recognition systems, smart home, smart metering	Robots supporting daily activities, reminding functions, offering mobility or cognitive entertainment	Serious games, tutorial, virtual reality (VR) and augmented reality (AR)applications	Social and domestic support services; everyday companions, volunteers
Emotional support, attention	1,6	Instant Messaging Services	Virtual, intelligent speech recognition systems	Emotional and social robots	Serious games, tutorial, VR, AR	Everyday companions, volunteers
Medical-therapeutic treatment	1,2	Apps reminding medication intake	Medication dispensers; products measureing heart rate, oxygen, blood glucose level, etc.	Mediaction reminding functions can be integrated in social robots, utilisation of telepresence robots	Virtual reality for certain psychological or psychiatric therapy	Telemedicine, Telehealth, services of pharmacies
Companionship for outgoing activities	1,0	Information through internet	Monitoring systems, personal alarms	Telepresence robots, social robots	Serious games, tutorial, VR, AR	Volunteers, everyday companions; pick-up services
Support of activities in the home and garden	0,2	Information through internet	Smart home technologies, intelligent cameras, virtual, intelligent speech recognition systems	Robotic lawn mower	Serious games, tutorial, VR, AR	Domestic and gardening services
Supporting social contacts and communication	0,2	Information through internet; messaging services, . . .	Virtual, intelligent speech recognition systems; intelligent cameras	Telepresence robots, social and emotional robots	Serious games, VR, AR, games including virtual players	Everyday companions, volunteers
Activating, rehabilitating treatment at home	0,1	Information through internet, platforms for different health issues	Monitoring device, personal alarm	Different robotic devices supporting rehabilitative training	Serious games, tutorial, VR, AR	Tele-rehabilitation
Assitance in cultural and social participation/	0,0	Information through internet	Monitoring device, personal alarm	Telepresence robot	Serious games, tutorial, VR, AR	Escort services, everyday companions, volunteers

(1) Heinemann-Knoch, Knoch, Korte (2015, p. 152)
(2) Time spent was measured in minutes and then calculated in hours per person. This category had in total 240 minutes which resulted in 0.

The first column presents the care activities arranged by the time informal and formal carers spend on them on average (column two) (Heinemann-Knoch et al 2005, p. 152).

Columns 4-6 cover the technology areas suggested by Khosravi and Ghapanchi (2016). As medication dispensing devices are often sensor based products, this category is included in the column "Sensor technologies". "Telemedicine" is subsumed to "Supplementary services" as it is a service utilizing sensor-based products and digitalized work processes. The column "Supplementary services" seems to be important as informal care is often complemented by "supplementary services". For each of these technologies, services were identified which can contribute to alleviate the life ofinformal carers.

A recent study on robotics in the healthcare sector (Klein et al. 2018) identified a range of robotic systems which could benefit informal carers and people in need of care. However, up to now the range of products on the market is rather limited, although many developments are going on and/or are being trialled.

Digitalisation might offer new possibilities for the reconciliation of work and care for informal carers as the table shows. Whereas telework[6] offers more flexibility where and when to work, new technological products could support similar concepts and enable long-distance caregiving with "telecare" provided by informal carers.

In order to present already used or trialled possibilities to support informal care, the following examples are given with respect to distance care and tackle issues such as monitoring of the health status, support against social isolation and support to structure everyday activities.

Informal carers often fear that their beloved one will encounter a health threatening and risky situation when they are alone at home. Although personal alarm systems have been available for more than 30 years, acceptance and their usage is low due to a variety of factors (cf. Klein et al. 2015). New camera systems in conjunction with an app enable the informal carer to monitor the home of the person in need of care and check during work time whether everything is fine. Also, virtual, intelligent speech recognition systems such as Amazon's 'Alexa' and comparable products enable informal carers to talk to their relatives and get some kind of feedback. Virtual, intelligent speech recognition systems are multifunctional products and provide a variety of possibilities also connecting to and utilizing smart home features (e.g. voice control of light, windows, shutters, heating, etc.)

These products are 'cool' and innovative and belong to the more low cost technical gadgets which can also be utilized to tackle social isolation, especially if informal carers live further away. Although tablets are viewed as rather easy to use technological systems, many older people are neither able nor willing to use these technologies. For those being able to use them, instant messaging services and videoconferencing possibilities allow contacting family and friends to reduce social isolation. More advanced are telepresence robots which offer – besides videoconferencing possibilities – also to move around in the home or, if telepresence robots are placed in public places such as local authorities, museums, theatres, etc., to move virtually outside the house and participate in social and/or cultural events.

[6] In the late 70ies "Telework" was introduced as a concept in the US and different realisation being investigated in the early eighties with the first pilot project on telework in the state of Baden-Württemberg (Bullinger, Fröschle, Klein 1987).

Telepresence robots at the work place and in the home of the person in need of care allow a reciprocal possibility for virtual meetings and exchange.

Mild cognitive impairment is an age related functional loss which can develop into dementia. Although no cure is still available, a health oriented life style can keep up much functionality. Key features of healthy life styles are, besides a healthy diet, physical exercise, meaningful activities, cognitive activities and also spiritual activities.

Whereas nursing care homes take these into account when structuring daily activities, care at home has to consider how these can be implemented if the person in need of care has to spend their time alone at home. Here, a robotic companion could offer possibilities to structure the day e.g. utilizing developed concepts in robotic programmes.

Ethical, legal and technological challenges

The development and utilization of these new assistive technologies have to consider ethical and legal questions

- Autonomy vs. Safety and Security / Risk taking:
  Whereas the concept of assistive technologies is based on concepts such as autonomy and independence, informal (but also formal) carers are often worried about the health status and possible deterioration. Here, the wish to monitor and reduce risks by new technologies can contradict with the wish of the person cared for to be independent, rather than being under surveillance and giving up on autonomy. This is in line with the results of workshops in the European project I-SUPPORTED on the use of bath robots: primary users (older people) attached more importance to autonomy and self-conception than to safety, whereas secondary users (formal and informal carers) perceived autonomy and safety as equally important (Klein, Schlömer 2018).
- Data protection: Utilizing technologies such as cameras and Amazon's Alexa means also to utilize a technology which is fairly new, i.e. their risks and safety are not clarified yet. Risks are unwanted intrusion of the informal or formal carer regarding the privacy of the person in need for care. Another possible threat could be being hacked by outsiders and thus, jeopardize the person cared for.
- New quality of communication: Utilizing telepresence robots is another means of communication. Compared to the traditional telephone additional elements such as video conferencing and a certain kind of mobility might contribute to another quality of communication. Here more research is needed on the possibilities and the impact of this usage.
- Utilizing robotic systems is also a very new possibility and still in a piloting phase. Here more research is needed on whether a robotic companion can contribute to structure daily living, encourage activities and overcome social isolation and contribute to well-being.
- From a technological point of view issues such as usability, ergonomics and reliability of the technological systems, safety of use, latency of internet transmission and consequently arising problems (e.g. telepresence robot bumps into person in need of care) are some of the problems which play a crucial role especially in the healthcare sector.

Other issues playing a role in acceptance and utilization are information and training of informal (and formal) carers in the possibilities and application of these technologies. A lot of efforts have been undertaken by the Federal Government, states, municipalities and welfare organisations. Examples are the care hotline (Pflegetelefon); a project on communal counselling services with a focus on assistive technologies and home modification, home modification services e.g. provided by voluntary workers, long-term care support centres, information and counselling

centres (e.g. Smart Independent Living Center at Frankfurt University of Applied Sciences[7], and more). One of the major challenges with respect to information, training and qualification is the currently rapid emergence of new assistive products. Here, decisions have to be made which are suitable for different needs, considering also the disappearance of "hyped" new products because technology did not fulfil requirements, were too costly or probably not mature enough for general usage. Not only rapid information intake and skill acquisition with respect to innovative assistive technologies is required, but also their sensible implementation for informal care and complementing services.

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