

# Gender blindness: On health and welfare technology, AI and gender equality in community care

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## Abstract

Digital health and welfare technologies and artificial intelligence are proposed to revolutionise healthcare systems around the world by enabling new models of care. Digital health and welfare technologies enable remote monitoring and treatments, and artificial intelligence is proposed as a means of prediction instead of reaction to individuals' health and as an enabler of proactive care and rehabilitation. The digital transformation not only affects hospital and primary care but also how the community meets older people's needs. Community care is often provided by informal and formal care-givers, most of whom are women. Gender equality is at the heart of many national strategies, but do all genders have equal rights, responsibilities and opportunities when it comes to community care and its digital transformation? The digital transformation of community care is entangled with how care is provided to older people and the working conditions of community-care professionals. Current and, even more so, future community-care systems are and will be partly constituted by networks of technological artefacts. These health and welfare technological artefacts and the discourse surrounding them mediate and constitute social relations and community care. This article looks into how health and welfare technology and artificial intelligence-based devices and systems mediate and constitute gender relations in community care and presents an argument for reflexivity, embodiment, pluralism, participation and ecology as an alternative strategy to treating community care as one-size-fit-all and being blind to gender-related issues.

## KEYWORDS

artificial intelligence, assistant nurses, community care, digitalisation, gender blindness, health and welfare technology, older people

## 1 | INTRODUCTION

In the age of the digital transformation of community care and the deployment of artificial intelligence (AI)-based devices and systems (e.g. automated decision-making, automated predictions and automated suggestions of innovations and treatments), it is important

that community care is not characterised by gender blindness (e.g. ignoring gender norms and expectations). From the past, we know that there are multiple grounds for discrimination, but in community care we do not know the perpetuating biases that may be 'black-boxed' in the design, implementation and use of technology and if it results in unequal care and discrimination (Nilsson & Börjeson,

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2016). What we do know is that women have a higher life expectancy than men; on the other hand, women perceive their health to be poorer to a larger extent than men (Smirthwaite et al., 2014): women suffer anxiety and worry to a higher degree than men and in Sweden twice as many women as men are on sick leave (SCB, 2020). The high level of sick leave has a negative impact on women's income, opportunities and future pensions, which in turn has a negative effect on their health. Furthermore, we do know that a majority of municipalities procure digital technologies and platforms in bulk for community care, using the one-size-fits-all approach instead of working with care recipients and care personnel to co-create, design and deploy digital technologies and platforms (Bergschöld, 2021; Frennert, 2020; Schwennesen, 2021). From a feminist perspective, the one-size-fits-all model fails to consider the importance of context, pluralism and diversity (Åsberg & Lykke, 2010).

This article is based on an ongoing project on artificial intelligence (AI) in community care. AI refers to technologies that demonstrate levels of intelligence (i.e. artificial and constructed intelligence). AI algorithms collect data from an environment, process data, detect patterns and produce outputs (i.e. collect data automatically without the need for humans to manually upload data) (Topol, 2019). The project aims to enhance collaboration between technologists, AI companies, community-care organisations, policy-makers, researchers, care recipients and community-care professionals. The project comprises several issues relating to power, gender and diversity. Community care is not characterised by equality: most care personnel and older care recipients are women. The personnel's work skills are seldom acknowledged, and their job is low-paid and has low status (Hayes & Moore, 2017; Meagher et al., 2016; Ravenswood & Harris, 2016). About half of the workforce are migrants (Wondmeneh, 2013). Engineering and entrepreneurship (e.g. developing and promoting innovations such as AI and digital solutions), on the other hand, are associated with masculine values and gendering (Ahl et al., 2016; Dy et al., 2017). As such, the project is situated between conflicting powers and interests, but these power relations are rarely acknowledged or recognised.

In community care, AI-based systems are proposed to be used for the algorithmic management of work processes and care (Alami et al., 2020). For example, an AI-based system that detects the fastest driving routes between care recipients (Bergschöld, 2016; Hengstler et al., 2016) or the likelihood of falls by collecting movement and activity data that reacts in case of deviation (Pilotto et al., 2018). The proposed advantages of applying AI in community care are to predict and prevent health deterioration; to personalise care; to increase patient participation; and to increase the efficacy and effectiveness of care-work processes (Kim et al., 2017; Queiros et al., 2017; Rubeis, 2020; Sapci & Sapci, 2019). The proponents claim that AI-based devices and systems can provide tailored personalised information synchronised with health research and diagnostics to maximise well-being and to help care recipients make informed decisions on lifestyle and healthcare, while the opponents claim that AI-based devices and systems will depersonalise care, as the algorithms will process large amounts of data and suggestions from the system

will regard the population averages and not the individual, stipulating what is considered normal versus abnormal or healthy versus ill from standardised datasets (Rubeis, 2020). As such, according to the opponents, the subject (e.g. the individual) will become objectified through the lens of people belonging to majority groups and universalism.

The discourse surrounding AI-based systems mirrors technological determinism (Jha & Topol, 2016). Technical determinism reflects the idea that technology follows its own logic and is the key factor of societal changes (Kaiserfeld, 2015). However, AI-based systems are designed by humans with a certain purpose or purposes in mind, reflecting a set of values and assumptions. AI-based system-processing data can, for example, include biomedical values or movement activities that are captured by cameras and/or sensors; raw data are not meaningful to the human user of AI-based systems but need to be transformed into useful information through, for example, visualisation of workflows or activities. Information becomes useful only when the receiver knows when, where and how the information is to be applied. By applying the collected information, it becomes knowledge and understanding (know-how). Knowledge and understanding, in turn, affect how the individual understands reality. As such, AI-based systems mediate knowledge and understandings of reality (Verbeek, 2011). Feminist Alison Adam (1995) argues that it is not the success or failure of AI-based systems that is important to explore, but 'what knowledge AI uses and how AI is used' (Adam, 1995, p. 356).

As AI-based systems need huge amounts of data, the quality of the datasets is crucial, as biased datasets can amplify inequalities and perpetuate discrimination. Biased datasets may have their foundation in the lack of a representative sample (leaving out minorities), or bias may exist in the overall population due to stereotypes or social constructs (Cirillo et al., 2020). Furthermore, most operating systems in community care do not incorporate modules on the differences between sex and gender and their differential impacts on community-care outcomes (Hay et al., 2019). Additionally, lack of data on gender assumptions, behaviours and norms in regard to contact with and decisions on community care and care interventions planned and carried out limits tracking how gender norms intersect with other social determinants of health and how power is distributed throughout the community-care cycle (i.e. care-recipient screening, decision-making, health interventions planned and carried out). In this regard, AI-based systems could be used to detect inequalities; for example, if men's need for community care is assessed differently than women's and if there are adverse reactions or ineffective treatments due to sex or gender expectations.

In Swedish community care, there are data recorded and reported on an individual level (Nilsson & Börjeson, 2016). On the national level, disaggregated data by age and sex are presented regularly, though it is unclear whether and how the disaggregated data are analysed and used in the practice of everyday eldercare and in formulating eldercare policy (Harnett, 2010; SKR, 2016/17). Nevertheless, the disaggregated data available can serve as a facilitator for gender transformation change, if used wisely. Science and

Technology Studies (STS) and feminist theories can be powerful analytical tools to investigate the epistemology of AI (e.g. how specific AI-based devices and systems shape our ways of knowing and understanding reality), as well as powerful tools to direct the development of AI-based devices and systems for community care towards increased gender equality (Dillon & Collett, 2019); asking questions about how sex and gender affect decision-making and involvement in the design, implementation and use of AI-based devices and systems; and how gender-based roles and norms affect the uptake and outcome of the AI-based devices or systems (Tannenbaum et al., 2016).

A portrayal of what we do know from the fields of STS, feminism and community care expect to place gender on the map to facilitate comparative studies about the impact of digital technologies and artificial intelligence on patterns of inequality in community care that impact some groups more than others, hopefully resulting in correcting possible biases and promoting gender-transformative digitalisation of community care. Gender-transformative digitalisation of community care refers to addressing gender-based inequalities and transforming harmful gender roles, norms and relations (Tannenbaum et al., 2016). Although the focus of this analysis is on gender, different power structures and grounds for inequality reinforce and influence each other (De los Reyes, 2014). Gender roles, identity and relations are socially and culturally constructed (Coen & Banister, 2012; Johnson et al., 2007). Simone de Beauvoir (1947) claims that 'you are not born a woman, you become one' (Butler, 1986). Social structures define what is considered female and male; they entail expectations and beliefs of what a man versus a woman should work with (i.e. surrounding power structures shape individuals and their possibilities) (Hirdman, 2003; Holgersson, 2013). The concept of intersectionality reflects the fact that people are simultaneously associated with several social identities, such as gender, ethnicity, sexuality, age, ability and socioeconomic status. (Crenshaw, 1989; Phoenix & Pattynama, 2006; Shields, 2008). The position of an individual or group of people is dependent on power relations and social structures. According to De los Reyes, the starting point of analysis should therefore be 'always gender, but not just gender'—that is, not analysing gender separately from other social categories (De los Reyes, 2014). As such, this article's point of departure is the gendered nature of health and welfare technology transitions in community care and social relations that divide men and women, while not disregarding other forms of power structures.

This article is organised as follows: it begins by reviewing the field of science and technology studies, feminism and gender/technology relations. It then describes the current digital transformation of community care and ends with a set of feminist qualities to increase equality in community care.

## 2 | SCIENCE AND TECHNOLOGY STUDIES

The field of science and technology studies (STS) has contributed rich studies about technological artefacts and how they are linked

to social relations within workplaces and communities of practice, explaining how and why technological artefacts mediate and construct practices (Latour, 1996; Mol, 2002; Pickering, 2010; Shove et al., 2012; Suchman, 1987). Researchers within the field of STS have also contributed by transforming models of science and knowledge acquisition into models centred on actors (human and non-human actors) (Callon, 1984; Haraway, 2006; Latour, 1996; Latour & Venn, 2002; Star, 1990; Wajcman, 2010) and historical, cultural, political, economic and social relations (Bijker et al., 2012; Butler, 2011; Cockburn & Ormrod, 1993; Haraway, 1988; Hughes, 1994; Oudshoorn & Pinch, 2003; Pinch & Bijker, 1984). From an STS perspective, technological artefacts are important parts of people's everyday lives: they are mediators of human experiences and practices (Giddens, 1984; Latour, 1994; Verbeek, 2011). As such, they can be powerful for increasing gender equality, whereas at other times they can enhance tensions and discrimination (Haraway, 2006; Perez, 2019).

In STS, processes of design, implementation and use are treated as sociotechnical processes. This means that technologies and the social contexts they are part of are understood as co-constitutive of each other (Pinch & Bijker, 1984). In the design phase, technological artefacts become affected by the developers' anticipated needs and the users' wants (Akrich, 1992; Dorrestijn, 2012; Latour, 1994): the developers' assumptions about men and women, femininity and masculinity, norms and values are inscribed into the technology. In the implementation phase, mediators (e.g. people who are not developers or end-users, such as managers, procurement strategists and politicians) infuse their ideas and assumptions about how the technology should be used by the end-users and in the community-care organisation: the mediators' norms and values get inscribed into the process of implementation by routines, protocols and standardised procedures. In the use phase, end-users make sense of the technology and negotiate (or reject) how to use and incorporate the technology into their everyday life according to their assumptions, norms, values and everyday life (Lie & Sørensen, 1996). Different groups of people (e.g. patients, care workers, line managers, doctors, nurses and next-of-kin) may make sense of the technology in different ways (Orlikowski & Gash, 1994).

In sum, technological artefacts and their usage are both imperative and the result of social practices. In STS, technologies are not perceived as neutral or taken for granted. Preconceived ideas and subconscious attitudes towards intended users are materialised in the design of technologies and in the practices in which they are used. As such, it is interesting to reflect on who makes the decisions on which technology to design, procure and implement in community care. Which attitudes, behaviours and perceptions guide the processes? Who benefits? Whose knowledge counts? Whose voice, perspective and expertise help to shape the technology and its outcomes? Are any alternative voices or perspectives left out? Are there any gender differences in the sensemaking of technologies?

Imbalanced power structures are seen in decision-making on procurement and implementation of technologies in community care, where men are more privilege in comparison to women (Baudin

et al., 2020). For example, a recent Swedish study shows that a majority of IT personnel in community care are men, with little experience of care work, but with high levels of power regarding technology decisions. Another study, published in the *Lancet*, highlights that while women comprise 70% of care workers, female representation in care decision-making positions remains low (Betron et al., 2019). It is argued that there are overarching structural inequalities in healthcare: the glass ceiling for women (Betron et al., 2019) while men ride the glass escalator (Puerta, 2020; Punshon et al., 2019). As the digital transformation of community care promotes men into the care sector, it may simultaneously lead to a devaluation of women and their impact on decisions in care, for example reproducing and maintaining power structures and gender expectations (Hedlin & Åberg, 2020).

### 3 | FEMINISM, GENDER AND TECHNOLOGY RELATIONS

The digital transformation of society has changed and will change individuals' everyday and working lives. Through the digital transformation of community care, there are opportunities to deal with gender differences that affect both women and men, though often in different ways (Adam, 1995). Either digital transformation can be part of supporting the reproduction and maintenance of gender expectations and power structures, or the digital transformation of community care can lead to more equal community care. Scientific theories help to make the world more understandable; they help us understand and notice how things are connected. Feminist theories facilitate our understanding of how cultural gender and biological sex are constructed. Feminist research is an interdisciplinary discipline that explores how our 'gendered' bodies are interpreted in different contexts and the consequences of these interpretations (Grahm & Lykke, 2015). Feminist theories provide answers to questions such as how and why gender matters.

Simplified, feminist theories can be viewed as deriving from two fundamental premises: an awareness that men as a group, historically, has been treated as superior to women; and an effort to change this relationship (Gemzöe, 2002). When it comes to seeking knowledge, feminist Donna Haraway (1988) argues that knowledge is always situated (Haraway, 1988). Researchers cannot interpret the world from the outside; all observations are based on the individual's perception of reality and the interpretation of different phenomena is based on the individual's understandings of reality and the time (historically) in which they are situated. In this context, objectivity is achieved by the researcher revealing their own position, perception of reality, time and space. This kind of objectivity differs from positivist objectivity, which does not recognise the researcher's position and perception of reality. Objectivity, as Haraway advocates, is therefore always partial, not universal. We thus perceive the world based on our social position, gender, ethnicity, class, education, etc., which means that objectivity is situated; where we are (both physically but also in

power relations) affects what we see and how we interpret reality (Haraway, 1988).

Similar to Haraway, Karen Barad (2007) argues that science is not a study/exploration of an objective reality, but how reality is perceived depends on our view of reality and our assumptions (onto-epistemology) (Barad, 2007). The author of this article is a cisgender woman with a background in human-computer interaction and user-centred design. Within feminism, there have been and are several different strands that influence the kinds of assumptions, claims and information that are questioned. Central to feminist epistemology are the acknowledgement of the value of different perspectives, the perception that knowledge is situated (e.g. that there exists pluralism in objectives, in contrast to neutrality and universalism) and the drive for change (i.e. activism) (Adam, 1995; Åsberg & Lykke, 2010; Barad, 2007; Butler, 2011; Haraway, 1988; Naples & Gurr, 2013). In regard to community care, the feminist perspective is relevant as it is the care workers, care recipients, next-of-kin and the care organisation's ontology (e.g. individual/organisational understandings of what constitutes reality, roles and structures) and epistemology (e.g. what individuals/organisations think is possible to know about reality) that constitute community care.

Throughout history, women have experienced the negative effects of hierarchical structures of power (Faulkner, 2001; Perez, 2019; Wajcman, 2010). The digital transformation of community care does not take place in a vacuum but in interaction with social, cultural, economic and political factors. Care work is a female-dominated occupation (Hartmann & Hayes, 2017), while technology is often constructed as a male domain (Oldenziel, 1997). However, the meaning people give to technology can change over time. For example, Cockburn and Ormrod (1993) studied the construction of meaning given to microwave ovens and concluded that initially microwave ovens were constructed as highly technological and masculine, aimed for men, sold among hi-fi equipment at department stores. However, men did not buy microwave ovens, so marketers decided to change the colour from black and brown to white and put microwaves among domestic appliances such as washing machines, fridges and cookers at department stores. As a result, microwave ovens moved into the kitchen area and it was reconstructed as a feminine low-tech appliance.

Such technology is not neutral but configured by norms and values in society regarding gender (Cockburn & Ormrod, 1993). Another classical study by Cowan (1983) on gender and technology shows that even though domestic technologies have increased, women spend as much time as before on unpaid household work (Cowan, 1983). Other studies on gender and technology show that when new technology is introduced, women's work becomes degraded and polarised from men's work (Glenn & Feldberg, 1977) and that women are replaced by men when technological change occurs in the workplace (Sommeestad, 1994). Furthermore, the professionalisation and specialisation of a trade may equal masculinisation. For example, computer work was initially rendered as female-coded, many of the earliest computer programmers were women and programming was considered as repetitive, mechanical and programmers were

visualised as low skilled, low-wage labour (Ensmenger, 2010). But during the 1960s, programming went through professionalisation and became high status and male-coded. The ideals of the discipline became masculine and female programmers had to accommodate to the masculine ideals in order to not be perceived as unprofessional: due to masculine ideals, women have to change who they are and the way they work to fit in or they will be marginalised (Ensmenger, 2012). This, in turn, has led to many women not entering the discipline of computer science or leaving it (Sax et al., 2017). The example of the history of programming shows that gender-coding of a trade is not fixed but historically and politically situated, though power structures and gender expectations may remain (e.g. when programming was female-coded, it was portrayed as mechanical, mundane, low skill work but as programming became male-coded it was portrayed as difficult, challenging, high skill work).

In the processes of the implementation and use of health and welfare technology, the configuration of gender is not fixed but situational and fluid (Halford et al., 2010; Wajcman, 2007). For example, a research study on the implementation of an electronic patient record (EPR) at a hospital in Norway illustrates how the implementation process was affected by levels of power, knowledge and gender assumptions (Halford et al., 2010): while the medical doctors were treated as skilled and knowledgeable workers able to learn how to use the system themselves (with or without voluntary training sessions), the nurses were treated as a homogenous group of workers in need of organised training and training sessions. Halford et al. (2010) conclude that 'the introduction of EPR was organisationally represented as a power/knowledge nexus where sexist presumptions about technical competence combined with the traditional hierarchy of the gendered professions of medicine and nursing reproduce distinctive, gendered and unequal representations of work and unequal work tasks' (Halford et al., 2010, p. 26). The configuration of gender as situational and fluid is illustrated by the researchers' portrayal of female medical doctors and nurses at one ward, who initially pushed for the introduction and use of EPR. The female doctors and nurses wanted to work with the developers to develop the EPR system to transform and change their work; however, the mediators (e.g. managers) and developers did not encourage this initiative, and in the end, the initial enthusiasm for the system soured (among the females at this specific ward) as the EPR system did not meet their expectations and wishes. The male nurses eagerly appropriated the EPR system and distanced themselves from the 'female-anti-technology-nurse relation' while the older female nurses were more reluctant and anxious towards the EPR system (Halford et al., 2010).

Unintentionally or intentionally, the implementation and use of the EPR system sustained norms and values regarding professions, gender and age. The previous case study illustrates how gender and sex affect and are affected by the implementation process. It shows that gender-transformative change does not happen automatically as gender expectations and power structures are reproduced and maintained if they are not recognised, acknowledged and questioned. However, research on sex and gender in relation to the implementation of technologies in community care is very scarce and

knowledge on how sex and gender affect and are affected by the implementation of digital community-care interventions is lacking (Tannenbaum et al., 2016). This in turn means that we do not know what works for whom, when and in which situations, or if the implementation process of digital artefacts in community care increases or decreases gender inequities.

#### 4 | THE CURRENT DIGITAL TRANSFORMATION OF SWEDISH COMMUNITY CARE

Swedish community care has gone through several changes over the years, from backing the institutionalisation of older vulnerable people to ageing at home (Davey et al., 2014). In the late 1980s, a new public-management model was introduced (Siverbo, 2004). The aim was to increase efficiency in public services by using 'business-like relationships between organisational units' (Siverbo, 2004, p. 401). The market logics in which the purchaser and the provider are split introduce more bureaucratic forms of public welfare services; the person in need of care must be assessed and granted care services from one unit of the community-care organisation while another unit (either a private vendor or another unit of the same care organisation) provides the care services (Frennert, 2018). As a consequence, the ones who provide care (e.g. care workers) need to follow care procedures aligned with fixed budgets outlined by the purchaser organisation, resulting in the reduction of care workers' influence on the care provided.

In recent years, the Swedish National Board of Health and Welfare has requested that community care uses a systematic screening and assessment model called IBIC (individual needs in centre), with the aim of increasing the standardisation of care assessment and treatments. The model is based on the World Health Organization's (WHO) classification of functioning, disability and health (ICF) (Stucki et al., 2002). ICF aims to link impairment, activity limitations, participation restrictions and health (WHO, 2001). At the same time as the standardised assessments model was introduced, digital systems that enable care workers digital access to schedules and appointed care services on their smart phones were initiated in community care. The relationship-based process of care was broken down in the digital system into measurable units of care (e.g. dressing, bathroom visit and breakfast preparation) to be digitally signed by the care worker after the care service was conducted (Bergschöld, 2018; Frennert, 2018). Some digital systems require care workers to sign in when they enter the care recipients' home, as well as to sign the care services provided and the time, they leave the care recipient's home (i.e. routinise care tasks and a digital system that dictates the pace of providing care, thereby affecting the space for autonomy and creativity of the community-care workers).

As mentioned, the care sector is female-dominated. Historically and today, in community care, a majority of the workforce is female assistant nurses. Crowley (2013) describes that women's work is often characterised by tight supervision, task segmentation and loss

of influence (Crowley, 2013), which the co-evolution of community care and the digital 'sign-in systems' reflects. Karasek and Theorell's (1990) demand-control model indicates that organising work, by the philosophy of Taylorism, may lead to unhealthy work environments (Karasek & Theorell, 1990). One sign that this may be the case in community care is that women working in the community-care sector have a very high degree of sick leave (Vänje, 2015). Nevertheless, it is not technology per se that causes unhealthy work environments or mechanistic care; it is how specific technologies are designed, implemented and used in different practices (Pols, 2017). The problem lies in the choices care organisations (e.g. management and local politicians) make in regard to their digital transformation of care work and services. This, in turn, raises the question of whose interests are leading the digital transformation of community care.

## 5 | DIRECTIONS FOR FUTURE COMMUNITY CARE

Using feminism as a framework for understanding and changing the digital transformation of community care can help us move away from treating community care and its digital transformation as one-size-fits-all to enact and foreground feminist qualities: reflexivity, embodiment, pluralism, participation and ecology (Bardzell, 2010). The following feminist qualities are far from a blueprint but represent a sample of what might be explored to challenge gender relations and power structures in regard to the digital transformation of community care:

### 5.1 | Reflexivity

Reflexivity refers to making visible the norms and assumptions that are embedded in the everyday thinking of community care (including self-reflection), exposing the assumptions and gender expectations that are involved in screening and assessing care needs, in decisions on granted community services (who uses what resources and to what extent and what are their sex, gender, functional variation, ethnicity, age, socioeconomic status (etc.)), distribution of community-care services (physical versus digital health interventions) and outcome measurements (what are the conscious and unconscious attitudes towards gender, functional variation, ethnicity, age and socioeconomic status in different areas of community care and how do these affect the perceived outcome?).

The community-care process (e.g. screening and assessing needs, decisions on eligible care services, interventions and care services carried out) is deeply influenced by values and beliefs. It is a combination of actions, choices and decisions that affect care receivers, care workers and next-of-kin lives and their possible choices for action. In regard to the digital transformation of community care, reflexivity may involve an examination of the beliefs and justifications driving the design, implementation and use of specific devices, systems and care services. For a gender-transformative change,

gender-based inequalities and gender roles, norms and relations need to be recognised, acknowledged and addressed, rather than being included into new AI-based devices and systems or digital health interventions (Tannenbaum et al., 2016).

The digital transformation of community care is the mechanism by which political, economic and societal values are materialised into everyday care practices (Latour, 2012). In community care, the key challenge is critical reflexivity: to question short-term goals (e.g. cost efficiency, performance measurements and productivity) and focus on long-term transitions to more sustainable future community care. In practice, continued effort needs to be invested in adopting humanising care processes, networking and co-operation, prioritising well-being of care workers, patient's and next-of-kin's, using environmentally friendly work processes and technologies to optimise the use of existing resources. Efficiency, effectiveness and specialisation are associated with male values and masculinity, if these values drive the digital transformation in community care, the digital transformation will be dominated by masculine systems and thinking (Stivers, 2010) and may hinder the possibilities for radically new ways of organising community care and delivering care through digital transformation. As such, it is important to reflect on the current conditions that constrain the realisation of changing existing community care situations and organisations to preferred ones. The *status quo* is not acceptable, due to several reasons highlighted both by governments (e.g. increasing costs and too few care workers) and researchers (e.g. poor working conditions and inequalities) (Buch, 2018; Bulmer, 2015; Gibson et al., 2019; Maslach & Leiter, 2017).

### 5.2 | Embodiment

In community care, the role of the body in producing knowledge is crucial. The care recipients' lived experience of health and illness is affected by both their physical bodies and their embodiments (e.g. everyday realities, how they view their everyday life through their bodies). The care recipients have tacit knowledge on how to live with bodily changes (e.g. how to adapt to everyday life and what makes them feel well or worse) (Wilde, 2003). Community care is embedded in relationships between the caring for and cared for (Noddings, 2002). Green (2012) suggests that 'care can be understood as relationships that are constructed in culture and society and shaped by political and structural environments' (Green, 2012, p. 1). Care work involves the looking after of bodies and as Adam (1995) describes, 'this type of bodily, concrete yet invisible labour produces a type of knowledge which is taken to be subordinate to mental knowledge, that is, if it is accorded the status of knowledge at all' (Adam, 1995, p. 369).

Care work is grounded in daily activities and dependent on contextual circumstances rather than formal and abstract systems of thought (Tronto, 1993). The rationality of caring and the skilled bodily knowledge of mutual connection with others requires highly developed cognitive and affective intelligence (Green, 2012). Community-care workers need to solve problems on a daily basis, which requires

innovation ability and capacity (Nählinder et al., 2015). However, in community-care work, innovation capacity is often made invisible, as the discourse surrounding what innovations are, what innovative thinking is and what it is not is male-gender coded and linked to technology (Nyberg, 2009). Although community care involves working with several technologies, these are considered low-tech (Sandelowski, 1997). As illustrated above, care workers lack high level of social capital and there is a risk that embodied knowledge is put in the background while foregrounding universal digital solutions in community care. Important benefits of integrating perspectives on embodiment (considering the lived body, agency and lived experience) into the conceptualisation of future community care and its digital transformation include the potential to maintain or restore care workers and care recipients' sense of identity and value, and their physical, embodied competence, which provide an important alternative to reductionist data algorithms or universal digital solutions.

### 5.3 | Pluralism

Community care is governed by political, economic and cultural forces (Szebehely & Meagher, 2018). Each community-care service carries a set of basic assumptions about good care, ageing and how to live-in society. However, what is considered good care, ageing and living in society may vary between different actors. Exploring different actors' conceptualisations and understandings of community care, care needs and how these needs should be met (e.g. engaging in more inclusive data-collection processes) is needed to move away from a genderblind universal model of community care to facilitate multiple ways of supplying and receiving community care. Contradictory views can drive change and inspire new ways and opportunities of seeing different situations, realities and solutions. This kind of learning cannot be achieved without involving different actors and perspectives. Pluralism involves foregrounding the diversity and different needs of different actors, putting humans at the centre of the development and trying to find technical and non-technical solutions to fit different needs and wants, rejecting technological determinism and universal solutions (Bardzell, 2010).

There are unfortunately numerous examples in community care, in which the pluralist perspective has not been considered. For example, many digital care services are developed to monitor older people, measure vital parameters and provide reminders (Archibald & Barnard, 2018; Berridge & Wetle, 2020; Frennert & Baudin, 2019). The digital monitoring solutions and sensors reflect norms and values about older care recipients—that they need supervision and reminders and that their state of health should be measured around the clock (Berridge & Wetle, 2020). The digital solutions are coded based on how the manufacturer interprets preferences and needs of users' (e.g. next-of-kin, care-givers, the care organisation and/or older care recipients'). While community-care organisations and care-givers seem to favour digital care services for the safety of older care recipients, older care recipients themselves favour different care services

depending on their everyday practices (Thorstensen et al., 2020). For instance, digital care services can support independence and autonomy among older care recipients with relatively good health and who have a social network, while care recipients with greater care needs and who have no or only a few relatives or friends value social contact with care staff (Nordgren, 2013). Other studies also show that using digital technologies for self-care and self-management can increase the sense of autonomy for some older care recipients, while others may become anxious and stressed about the use of digital solutions and the lack of social contact (Berridge & Wetle, 2020; Pols, 2017; Sánchez-Criado et al., 2014; Stokke, 2016).

The perspective of pluralism could help support attending to intersectionality. Older care recipients are not a homogenous category of people with the same kind of needs and digital technologies to support older people to become more self-sufficient cannot be designed, procured and implemented in accordance with a one-size-fits-all model. The perception and discourse on old age are in a similar vein as that of gender, a multidimensional construct, confined with biases, prejudices and historical discrimination (Katz, 2005). The current trend towards older people as consumers and the marketisation of community care are problematic from an age and gender-relation perspective, as older people with greater wealth and higher education will benefit while older people who are poor won't afford the care services provided by the private market (Szebehely & Meagher, 2018; Thorstensen et al., 2020). This development may have a negative impact on older people in general and on older women in particular, as disadvantages during their life courses accumulate.

### 5.4 | Participation

Participation focuses on giving voice to users through participatory and co-design approaches (Bardzell, 2010). The matter is not only to involve care recipients, next-of-kin and care workers but also to give them democratic influence in decision-making and the outcome. Several researchers have shown that even though prospective older users are involved in the design process, they do not have much influence in the decision-making and on the outcome (Neven, 2010; Oudshoorn et al., 2016). Hence, in many cases, prospective users are involved to legitimise the developers' and designers' decisions and designs (Östlund et al., 2015). However, the participation of perspective users and a variety of actors may result in new mindsets and ways of thinking, resulting in meaningful alternative solutions and ideas, if done democratically (Bødker, 2003). How we perceive the world, our needs, wants and wishes depends on our own position and power. According to standpoint theory, if belonging to the dominant group, it is impossible to understand and perceive oppression: people from marginalised groups have different knowledge compared to people in dominant groups (Harding, 2004; Smith, 1987). In order to challenge the *status quo* in the digital transformation of community care, not only do people from dominant social groups need to be present and have the power to impact decisions, but also people from social groups who are marginalised and

discriminated. Community care organisations, who are planning for digital transformation, need to apply generative tools in which different kind of users can express their ideas and dreams (Sanders, 2002). Different stakeholders must come to understand how they frame the problems, in order to then develop alternative perspectives on the problems, that might afford attending to the marginalised who are impacted by the digital solutions or AI systems that are designed for the majority (Clarkson et al., 2013; Papanek & Fuller, 1972).

Past research shows that when technology enters the domain of community care, it reduces the role of care workers and/or reassigns labour to others; furthermore, the implementation is surrounded by narratives portraying care workers as technically unskilled, unmotivated and lazy (Gibson et al., 2019; Gómez & Criado, 2021; Schwennesen, 2021). As such, unsuccessful digital transformation or failure to diffuse welfare technologies into care practices are seen as behavioural problems, blaming care workers for being unskilled, lazy and unmotivated instead of re-evaluating the digital solution or implementation process. By involving care workers in the design and implementation of digital solutions, the mismatch between the management and mediators' goals with digital solutions or AI-based systems and the values and aspirations of care workers may be overcome. Digital solutions or AI-based systems are more likely to be adopted by care workers if the technologies and their utilities are in line with the core values of care workers (Van der Bijl-Brouwer & Dorst, 2017). The same argument goes for other marginalised social groups. In regard to participation, both pluralism and reflexivity are crucial for transitional social change (Irwin, 2015).

## 5.5 | Ecology

Our environment and world are constituted with technology (Lupton & Seymour, 2000). Digital devices or artefacts affect how we perceive our reality and live our lives (Verbeek, 2011). Ecology refers to the network of artefacts that are deeply pervasive in everyday life and in community care. It is not just one technological artefact but several that affect most individuals' everyday lives and working conditions; these artefacts are interconnected both in terms of meanings and functions (Csikszentmihalyi & Halton, 1981). Bardzell (2010) suggests that the ecology approach involves considering the effects on the widest range of stakeholders throughout the design, implementation and use of a network of artefacts (Bardzell, 2010). The introduction of each new digital care service or digital device in community care needs to be considered and evaluated in relation to old ways of providing care and the network of artefacts it is intended to fit into and be balanced between the technical and the non-technical, as the digital transformation of community care will be conditioned by the technologies being implemented and in turn affect certain ways of providing care and organising care work. In current community practice, the mediators (e.g. people who are not developers or end-users, such as

managers and procurement strategists) often fail to procure new digital solutions that are compatible with legacy systems and technological solutions that are already embedded (Berger et al., 2019; Dupret, 2017). This, in turn, results in that care workers frequently need to resort to workarounds, "invisible work", which is largely performed by women (Dupret, 2017).

The digital transformation of community care is changing the everyday lives and realities of care recipients, next-of-kin and community care workers and I hope that applying the feminist qualities described above as a way of thinking, in the design, implementation and use of digital care services and systems and for guiding the digital transformation of community care, will positively result in community care becoming more just and equal. I hope this paper inspires scholars and practitioners to re-conceptualise community care and gender as a dichotomy and to challenge hegemonic structures in the digital transformation of community care.

## 6 | CONCLUSION

We need to pay attention to how gender is made in the digital transformation of community care through the design, implementation and use of health and welfare technologies and through interaction between people and due to gender-based expectations, which are projected through norms and values in society. The constricted genderblind vision of community care makes it difficult to recognise the pervasiveness and normality of gender relations and power relations based on biases, norms and structural inequalities. Power relations and gender order take place in community care and must be paid attention to in order for gender-transformative change to occur. Gender-transformative change does not happen automatically by the digital transformation of community care because gender expectations and power structures are reproduced and maintained if they are not recognised, acknowledged and questioned. By enacting and foregrounding the feminist qualities of reflexivity, embodiment, pluralism, participation and ecology, we can move away from the genderblind one-size-fit-all model of community care to embrace the importance of context, pluralism, participation and diversity. Gender-transformative change requires iterative work, in which assumptions and gender expectations are exposed and the design, implementation and use of technologies in community care are scrutinised, tested, evaluated, revised and tested again.

### CONFLICT OF INTEREST

There are no relevant financial or non-financial competing interests to report.

### DATA AVAILABILITY STATEMENT

Data sharing not applicable—the article describes entirely theoretical research.

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