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Assessing user experience on AreaAlzheimer platform: A study on usability, accessibility, and usefulness

Desiree Piromalli MA[a,*], María Aurora Cañadas-Romero PhD[b], Marta Ivirico-Prats MA[b], Marc Suárez-Calvet MD, PhD[c,d], Ana Beriain Bañares PhD[e], Maria Sanchez Valle PhD[f], Laia Ortiz Castelvi[b]

[a]Universitat Abat Oliba CEU, CEU International Doctoral School (CEINDO), Social Research Area, Fundación Pasqual Maragall, Barcelona, Spain; [b]Social Research Area, Fundación Pasqual Maragall, Barcelona, Spain; [c]BarcelonaBeta Brain Research Center (BBRC), Barcelona, Spain; [d]Neurology Department, Hospital del Mar Research Institute, Barcelona, Spain; [e]Department of Communication, Education and Humanities, Universitat Abat Oliba CEU, CEU Universities, Barcelona, Spain; [f]Department of Audiovisual Communication and Advertising, Universidad CEU San Pablo, CEU Universities, Madrid, Spain

**Corresponding author: dpiromalli@fpmaragall.org*

Abstract

Background: Dementia is among the fastest-growing global diseases, with Alzheimer's disease (AD) representing 60–70% of all cases. In Spain, over 900,000 people are currently affected, and this number is expected to double within the next 20 years. This research focuses on Catalonia, where an estimated 90.000 individuals live with AD or related dementias. Care responsibilities largely fall on family members, primarily women—especially daughters or spouses—aged between 45 and 64 years.
Research Objective: This study assesses the usability, accessibility, and perceived usefulness of AreaAlzheimer (AA), a digital platform designed to support Alzheimer's family caregivers. AA offers resources such as information, emotional support, community engagement, training, and research participation.
Methods: A mixed-methods design was used. Quantitative data were collected via standardised scales: accessibility (Single Ease Question), usability (System Usability Scale), and usefulness (Perceived Usefulness Scale and Behavioural Intention Scale). Qualitative data were gathered through focus groups. Participants were 40 family caregivers of individuals with AD, drawn from the Pasqual Maragall Foundation database.
Results: Accessibility and intention to use received the highest ratings (average score: 4.5/5), while perceived usefulness was rated lower (3.4/5). The platform's usability scored 74.3/100, suggesting acceptable functionality. Focus group discussions highlighted a need for enhanced visual design and accessibility features to accommodate users with varying levels of digital literacy.
Conclusion: Findings indicate that digital platforms like AA have significant potential to support informal caregivers. However, continuous improvements based on user feedback are essential to ensure broader usability and relevance.

Keywords: Alzheimer, technology, digitalisation, informal caregivers, user experience

INTRODUCTION

Dementia is one of the fastest-growing diseases worldwide, with Alzheimer's disease (AD) accounting for 60-70% of all cases. The World Health Organisation (WHO) estimates that 55 million people are currently living with dementia globally, a number that could potentially triple to 152 million by 2050, with 9.9 million new diagnoses annually (WHO, 2023). In Spain, it is estimated that over 900,000 individuals are affected by Alzheimer's or other forms of dementia, a figure expected to double within the next 20 years (Molinuevo et al., 2018). In Catalonia, where this study is based, an estimated 90.000 individuals live with AD or related dementias (CEAFA, 2022).

The growing prevalence of dementia has led to an increasing demand for effective support systems for both individuals affected by the disease and their caregivers. According to data from the National Statistics Institute (INE), in Spain, family caregiving primarily falls on women, specifically daughters or spouses, with an average age ranging from 45 to 64 years (INE, 2020).

Systematic reviews, such as those by McCabe, You, and Tatangelo (2016) and Mansfield et al.

(2023), have stressed the importance of identifying and addressing the various unmet needs of informal caregivers. These studies underline the importance of creating a comprehensive framework that underscores the need for personalized, multi-faceted interventions and the integration of technology to address the diverse and evolving needs of informal caregivers. In this context, technology-based solutions are gaining attention as tools to support caregivers.

However, despite growing interest in the development of interventions to support informal caregivers of people with dementia, the literature reveals significant gaps that limit their effectiveness and implementation. McCabe, You, and Tatangelo (2016) highlight the lack of personalized approaches and the absence of comprehensive frameworks that address the emotional, informational, and practical needs of caregivers. Similarly, Mansfield et al. (2023) emphasise the scarcity of rigorously designed and methodologically valid studies, noting a limited evidence base, high heterogeneity among interventions, and short follow-up periods that hinder the assessment of long-term outcomes. Moreover, while the potential of technology-based solutions is increasingly recognised, there is still a lack of systematic evaluations of user experience (UX)—a critical factor for ensuring the usability, accessibility, and acceptance of such platforms by caregivers. The absence of research focused on the quality of interaction between users and digital tools represents a crucial gap that must be addressed to ensure the development of truly effective, personalized, and sustainable support systems.

Given these gaps, although technology-based solutions are gaining attention as promising tools to assist caregivers, existing digital platforms often fail to meet caregivers' real needs due to a lack of user-centred design and limited empirical evaluation.

In this context, this study aims to evaluate a pilot version of AreaAlzheimer, a digital platform designed to support family caregivers of individuals diagnosed with Alzheimer's disease. This case study is conducted in the Autonomous Community of Catalonia, Spain, and examines the evaluation of a digital platform designed for family caregivers of individuals diagnosed with Alzheimer's disease residing within this region.

Digital tools in the context of family care

Numerous studies on the design of digital tools have relied on usability measurement to evaluate aspects related to system effectiveness, efficiency, and user satisfaction (Asan et al., 2018; Juan Llamas, 2020; Wetzlinger et al., 2014). Additionally, these scales have been employed in other studies related to the development of digital tools in the context of family caregiving for individuals diagnosed with Alzheimer's disease (Boutilier et al., 2022; Chiu et al., 2009; Lewis et al., 2010; F. Meiland et al., 2017; F. J. M. Meiland et al., 2014; Subiyakto et al., n.d.; Van Der Roest et al., 2010). These studies are characterised by a multi-method approach, aiming to capture the most relevant aspects to evaluate a system with maximum accuracy through various research techniques.

Previous research on digital tools in caregiving contexts has emphasised the need for systems that accommodate users with diverse digital skills (Boutilier et al., 2022; Chiu et al., 2009; F. Meiland et al., 2017). In Catalonia the digital divide is particularly pronounced among individuals over 65 years old (Fernández-Ardevol et al., 2023). According to the same authors, the digital divide refers to significant disparities between those who can access and benefit from digitalisation and those who cannot be due to economic, technical, or digital literacy constraints.

AreaAlzheimer evaluation

The evaluation of the AreaAlzheimer (AA) digital platform represents the third phase of a broader research project titled "Development of a Comprehensive Digital Platform for Alzheimer's Disease in Catalonia." This initiative, funded by the Department of Social Rights under the Recovery, Transformation, and Resilience Plan (Next Generation EU), aims to address the needs of family caregivers of individuals diagnosed with Alzheimer's Disease (AD).

The initial phase of the research focused on identifying unmet needs among family caregivers. Findings indicated that caregivers, primarily women aged 60-65, who had cared for a parent or spouse for three to five years, required access to reliable information, professional support, guidance on interaction with their relatives, and a support network (Fundació Pasqual Maragall, 2022; Piromalli et al., 2023). In the second phase, a codesign approach involving caregivers was implemented to determine the content structure of the AA platform, leading to the identification of four key areas: information access, virtual community, emotional support, and task management (Fundació Pasqual Maragall, 2024). To continue with the development of this platform, it is important to ensure that potential users, many of whom may have limited technological proficiency, can effectively engage with the platform's content and services (Paniagua et al., 2020; Riaño Herrera & Ballesteros Ricaurte, 2014). In line with these studies, results from the second phase of our research indicate that 23.7% of participants over 65 self-reported having low or basic digital skills, compared to only 7.7% among those under 65.

In this phase of the research, the primary objective is to evaluate the pilot platform through user experience. This concept encompasses the overall use of a system, product, or service—specifically, a digital solution—including its emotional impact on users' lives (Jegundo et al., 2020; Khanassov et al., 2021). It is closely related to users' perceptions and responses (emotions, perceptions, preferences, behaviours) resulting from their interaction with or anticipation of using a system, product, or service. These responses are influenced by each user's personality, prior experiences, attitudes, skills, and capabilities, as well as the specific context of use (Jegundo et al., 2020).

Given that user experience (UX) is a broad and complex concept based on the subjective evaluation of an individual's interaction with a system at a given moment, it has been operationalized into several measurable dimensions. One of the most critical dimensions for assessing user experience is usability (Bangor et al., 2009; Boutilier et al., 2022; Brooke, 1996; Jegundo et al., 2020), which can be defined as "the extent to which a system, product, or service can be used by specific users to achieve specific goals effectively, efficiently, and satisfactorily in a specific context of use" (International Organization for Standardization, 2019; Sauro & Lewis, 2012). In the case of the AA platform, this would involve ensuring that caregivers can easily navigate the system to access relevant information or complete tasks with minimal barriers.

Closely related to usability, accessibility, focuses on inclusive design. It ensures that the system, product, or service is usable by individuals with a wide range of abilities and disabilities, including those with physical, sensory, or cognitive impairments. An accessible platform should be usable by people regardless of their condition, offering features like compatibility with assistive technologies (Paniagua L. et al., 2020; Riaño Herrera & Ballesteros Ricaurte, 2014). For the AA platform, this would involve ensuring that individuals with diverse abilities can access and use the content, regardless of their specific challenges.

Usefulness, in turn, refers to the perceived value of a system, product, or service. It assesses whether the system effectively addresses users' needs and whether it provides sufficient value to help them achieve their goals. Usefulness reflects the benefits that users perceive from interacting with the platform, and it directly influences their satisfaction and intention to continue using it (Sauro & Lewis, 2012; Tahar et al., 2020). For caregivers, this would include evaluating how well the AA platform meets their needs for reliable information, emotional support, and caregiving tools.

Within this context, the primary goal of the pilot evaluation is to verify that the platform is both technically functional and accessible to its intended user (family caregiver). A mixed-methods approach, incorporating both quantitative and qualitative assessments, was used to measure usability, accessibility, and perceived usefulness.

METHODS

Metrics

To evaluate the platform, we used a mixed-methods approach, which combines quantitative and qualitative research techniques to obtain a more comprehensive understanding of the user experience. The quantitative part consisted of a structured survey divided into two sections. The first section gathered information on caregivers' socio-demographic characteristics, including age, sex, education level, marital status, employment status, living arrangements, and their relationship to the person diagnosed with Alzheimer's disease.

The second section focused on the evaluation of the user experience on the digital platform. Three key dimensions were assessed: usability, accessibility, and usefulness. These dimensions reflect not only how the platform performs from a technical and functional standpoint but also how caregivers perceive its relevance and potential integration into their daily routines. To do this, the following validated scales are employed (Asan et al., 2018; Boutilier et al., 2022; Kaczmarek et al., 2015; Park et al., 2023; Tahar et al., 2020):

1. Usability was measured using the System Usability Scale (SUS): a standardized questionnaire that captures users' agreement or disagreement with a series of statements related to the platform's ease of use, efficiency, and intuitiveness (Brooke, 1996). It consists of a 10-item Likert scale assessing usability, and a 5-point response scale (1=strongly disagree to 5=strongly agree).

2. Accessibility was measured through Single Ease Question (SEQ) to assess users' subjective evaluation of how easy or difficult it was to complete specific tasks on the platform, including navigation, layout, and overall clarity (Sauro, J. 2012). It is based on a 7-item scale assessing the difficulty of the different tasks performed on a 10-point scale. To facilitate the understanding of the scale and the interpretation of the results, the values were considered from 1 (very easy) to 10 (very difficult).

3. Usefulness was measured through two different scales: Perceived Usefulness Scale (PUS) which evaluates whether users believe that a given tool enhances their task performance and include four statements and a 5-point response

Table 1. Dimensions and scales used to assess the AreAlzheimer platform

UX dimention	Description	Scale	Measurement
Usability	Measurement of the perceived ease of use of the platform through the level of agreement/disagreement with a series of items	**System Usability Scale (SUS)**	Likert scale from 1 to 5: (1) Strongly disagree and (5) Strongly agree
Accesibility	Subjective opinion of users on their experience of using the platform	**Single Ease Question (SEQ)**	Likert scale from 1 to 10: (1) very easy and (10) very difficult.
Usefulness	Individuals' perceptions of how technologies can improve their tasks or functions.	**Percieved Usefulness Scale (PUS)**	Likert scale from 1 to 5:(1) Not at all (5) a great deal
	Perception of the intentions / behaviour of the users to start using a web-based intervention.	**Behavioral Intention Scale (BIS)**	Likert scale from 1 to 5:(1) Not at all (5) a great deal

scale (1=not at all to 5=a great deal); and Behavioural Intention Scale (BIS) which reflected the users' willingness to adopt or continue using the platform in the future. It served as an indicator of the perceived value and motivation to engage with the digital intervention over time. It includes 4 statements and a 5-point response scale from 1 (not at all) to 5 (a great deal).

Table 1 summarises the different dimensions considered and the different scales used to assess the platform.

The qualitative part of the study involved a face-to-face session with two focus groups. These discussion groups were designed to explore caregivers' experiences and impressions of the platform in a more flexible and open-ended manner. Participants were encouraged to share their opinions about the content, usability, design, and relevance of the platform to their daily caregiving tasks. Qualitative techniques such as focus groups and in-depth interviews are widely used in usability evaluations, as they provide nuanced insights into users' perspectives and interaction with a digital product. These methods are especially valuable for uncovering usability issues, emotional responses, and subjective perceptions that may not emerge through quantitative measures alone (Block et al., 2020; Lewis et al., 2010; Wittich et al., 2023).

By integrating both dimensions, this mixed-methods design offers a more holistic evaluation. While the quantitative data provide measurable indicators of the caregivers' profiles and initial assessments, the qualitative data enrich the analysis by capturing their lived experiences, contextual factors, and expectations. This comprehensive perspective is essential for developing user-centred digital tools that are not only functional but also meaningful and accessible to their intended audience.

Survey data were analysed using SPSS 23. A descriptive analysis was carried out by calculating the mean values and standard deviation for each of the scales described. A content analysis of the main aspects highlighted in the discussion groups using Atlas 25 was also performed.

Participant selection

Participants were selected from the Pasqual Maragall Foundation's database of family caregivers. To do this, a purposive sample was used, considering the following criteria: 1) being over 18 years of age; 2) being a caregiver of a relative with dementia; and 3) having participated in an intervention programme for caregivers of the Pasqual Maragall Foundation.

The recruitment process took place during the months of October and November 2024. The pilot evaluation was divided into two parts. The first one was an online evaluation where participants used the platform and completed an evaluation survey. The second one was a face-to-face test. In both parts, participants were asked to complete a series of tasks, including navigating the information section, participating in community forums, registering for support programs, adjusting user settings, and completing the same UX evaluation survey.

Of the total sample selected (n=40), 21 caregivers participated in the online evaluation and 19 attended the face-to-face session. The same participants from the face-to-face tests then took part in focus groups. All participants in the groups were given information about the purpose of the research. They accepted the terms of the research and signed an informed consent form. In this case, in addition to the above criteria, the fact that the participants were residents of Barcelona was considered.

The sample represented a diverse background in terms of education, technology familiarity, and caregiving experience, ensuring comprehensive feedback on platform usability.

RESULTS

Sociodemographic profile

The profile of the participants corresponds mainly to women (72.5%) with an average age of 57.6 years. Men participated to a lesser extent (27.5%), and the average age is higher than that of women (64.5 years). Most participants had a university-level education (62.5%) and were either employed (47.5%) or retired (30%). Regarding their caregiving role, 70% were caring for a parent and 30% for a spouse, with 75% identifying as the primary caregiver and 47.5% live with them (*Table 2*).

Table 2. Sociodemographic profile

Sex	**n(%)**
Woman	29 (72,5%)
Man	11 (27,5%)
Total	40
Age	
Under 55 years old	16 (40%)
Between 55 and 60 years old	12 (30%)
Above 65 years old	12 (30%)
Total	40
Marital status	
Married	24 (60%)
Single	13 (32,5%)
Divorced	3 (7,5%)
Total	40
Education	
Primary level	1 (2,5%)
Secondary level	6 (15%)
Professional training	3 (7,5%)
Pre-university education	5 (12,5%)
College degree	17 (42,5%)
Master/postgraduate studies	8 (20%)
Total	40
Employment status	
Full time employee	19 (47,5%)
Part time employee	4 (10%)
Retired	12 (30%)
Unemployed	3 (7,5%)
Household chores	1 (2,5%)
Student	1 (2,5%)
Total	40
Kinship	
Mother/Father	28 (70%)
Partner	12 (30%)
Total	40
Primary caregiver	
Yes	30 (75%)
No	10 (25%)
Total	40
Cohabitation	
Live with me	19 (47,5%)
Lives alone	5 (12,5%)
Lives with other family members	9 (22,5%)
Lives in a nursing home	3 (7,5%)
Lives with a professional caregiver	4 (10%)
Total	40

We used the Single Ease Question (SEQ) to assess the accessibility, the System Usability Scale (SUS) to assess usability, and both the Perceived Usefulness Scale (PUS) and the Behavioural Intention Scale (BIS) to assess usefulness. The results for each of the scales are shown in *Table 2*. According to the total average (SD) obtained, the best evaluated dimensions are accessibility and intention to use, with a mean score of 4.5 (SD for SEQ:3.02; SD for BIS:0.75). On the other hand, perceived usefulness obtained an average of 3.4 (1.08).

The same table also shows the mean and standard deviation of the different items of each scale for all participants. In terms of accessibility (SEQ), the tasks with the highest difficulty scores were participating in the forum (X:5.38; SD:3.24) and changing the stage of the disease (X:5.57; SD:3.24). In contrast, accessing profile information (X:3.89; SD:3.10) or searching for information about the programmes (X:4.05; SD:2.63) were identified as the easiest and most accessible tasks with the lowest mean scores. In terms of usefulness, the items with the highest mean scores are related to the intention to use the platform, while actual perceived usefulness received lower scores. Regarding intention to use the platform (BIS), the highest scores are related to accessing AreaAlzheimer to get information about the disease (X:4.60; SD:0.63), accessing caregiver programmes (X:4.58; SD:0.67) or recommending the platform to other caregivers (X:4.55; SD:0.60). On the other hand, in terms of perceived usefulness (PUS), they positively appreciate that the AA platform is easy to use (X:3.33; SD:1.05) and that it is clear and understandable (X:3.36; SD:1.14).

We also used the System Usability Scale (SUS) to assess usability in terms of the caregiver's perception of the tool. Scores on this scale range from 0 to 100 points, depending on the degree of perceived usability of the product being evaluated. The work carried out by Lewis and Sauro (2018;2012) on the validity and reliability of the SUS established a standard score of 68. This value is considered a standard benchmark in system usability assessments. A score above 68 indicates above-average usability, while a score below it suggests areas for improvement. The overall user experience score for the AA interaction was 74.3, indicating an acceptable level of usability. If we look at the mean value of each of the items that compose this scale (*Table 3*), the highest average corresponds to the items "I thought that I would like to use AreaAlzheimer frequently" (X:4.28; SD:1.12), "I thought that using AreaAlzheimer would be easy for me" (X:4.10; SD:0.97) and "I thought that the selection of content is appropriate" (X:4.10; SD:0.79).

Through the analysis of the discussion groups, we identified three categories related to usefulness and accessibility, as well as three categories associated with key areas for improvement highlighted by participants, mainly related to the adaptation to different caregiver profiles and improvements in intuitive navigation. Two members of the research team independently translated the quotations. These translations were then cross-checked to ensure they were as accurate as possible. *Table 4* presents selected quotes that illustrate the main themes that emerged during the sessions.

Table 3. Results of AA Platform evaluation

Accesibility (Single Ease Question)	**Mean value (SD) (n=40)**
Navigate to the section where information can be found	3,92 (2,85)
Search and find articles that fit your interests	4,3 (2,72)
Participate in the fórum	5,38 (3,24)
Modify your user name	4,29 (3,33)
Find information about the programmes	4,05 (2,63)
Access profile settings	3,89 (3,10)
Modify the phase of the disease (if there have been changes)	5,57 (3,24)
Total score	4,58 (3,02)
Percieved Usefulness Scale	
AreaAlzheimer Platform is easy to learn and use	3,33 (1,05)
AreaAlzheimer Platform is clear and understandable	3,36 (1,14)
AreaAlzheimer Platform is easy to use	3,41(1,04)
Total Score	3,36 (1,08)
Behavioural Intention Scale	
How much would you like to use AreaAlzheimer?	4,50 (0,75)
Would you recommend AreaAlzheimer to other carers you know?	4,55 (0,60)
Would you use the AreaAlzheimer to get access to the Foundation's programmes for carers?	4,58 (0,67)
Would you use AreaAlzheimer to find out more about the disease?	4,60 (0,63)
Would you use AreaAlzheimer to get in touch with other carers?	4,13 (1,11)
Total score	4,47 (0,75)
System Usability Scale	
I thought I would like to use the AreaAlzheimer platform frequently.	4,28 (1,12)
I have found access to the AreaAlzheimer platform too difficult.	1,97 (1,11)
I thought that using AreaAlzheimer was easy for me.	4,10 (0,97)
I thought I would need the support of a technician to be able to use AreaAlzheimer.	1,78 (1,29)
I thought that the selection of content was adequate	4,10 (0,79)
I thought that there are many errors in the contents of the AreaAlzheimer platform.	1,71 (1,02)
I thought that most people would learn to use AreaAlzheimer quickly.	3,13 (1,14)
I thought that AreaAlzheimer was too complicated to use.	2,26 (1,14)
I felt very confident using AreaAlzheimer	3,77 (1,01)
I think I need to learn a lot of things before I start using AreaAlzheimer	1,85 (1,19)
Total score	2,89 (1,08)

Related to usefulness, the collected discourses confirm the scores obtained on both scales. The behavioural intention to use (BIS) revealed a high intention to use the platform, suggesting strong motivation among caregivers to engage in the future with the tool. Nonetheless, this intention was often linked to specific features, such as access to information and caregiver programmes or information about de disease, rather than to the overall perceived usefulness (PUS), which received lower scores. This divergence was captured in qualitative responses that highlighted the platform’s potential and reflected a high level of satisfaction with the platform's content (FG2_Q2; FG2_Q1) but also called for greater personalization, downloadable resources, and clearer pathways for actions (FG1_Q5; FG2_Q5).

On the other hand, although the overall SUS score of 74.3 indicates an acceptable level of usability, caregivers considered the need to improve specific elements related to accessibility and navigation of AA. The need for these improvements is consistent with the scores obtained on certain SUS items, which refer both to the ease of learning how to use AA, “I thought that most people would learn to use AreaAlzheimer quickly” (X = 3.13) and the perceived level of confidence when using AA, “I felt very confident using AreaAlzheimer” (X = 3.77). Related to these results, some statements in the focus groups reflect the need for the content to be more straightforward and easier to navigate (FG1_Q4). Closely related to the perceived usability of the platform, the scores obtained regarding the accessibility of AA, measured through the SEQ, suggest that most tasks were considered relatively easy. However, some participants in the focus groups emphasized the need to enhance AA to ensure accessibility for diverse caregiver

Table 4. Categories of usefulness, accessibility, and opportunities for improvement

Category	Description	Illustrative quotation
Usefulness	Usefulness of the content and information available	*"If the content looks good, the images are appealing, and it grabs your attention, it keeps you engaged (…). I find the idea of 10-minute readings or 4-minute readings interesting because, you know, if you're on the metro or the bus, I think, 'Oh look, 4 minutes, I have time,' and I read it. It's great that it displays the reading time—I found that to be a positive aspect (...)" (FG1_Q1).* *"I think the menus are appropriate, and the information is very well presented (…). In my opinion, at least for me, it has been very useful." (FG2_Q1).*
	Intended use of the platform	*"I found the content excellent. Once it becomes available, I will definitely use it because the forum and everything related to it seem like a great meeting point (...)." (FG2_Q2).*
Accesibility	Visualization of the platform	*"(…) When I accessed it, I noticed the use of very light colors and many images, which made it feel fresh and visually appealing." (FG1_Q2).*
	Improvement suggestions	
Accesibility	Adaptation to different caregiver Profiles	*"It is true that if you're targeting an audience more focused on caregivers, we are probably not the typical users. I mean, there are older people and younger people, but we all are users of this. A person who is not accustomed to a standard website may find it a bit more challenging. However, for the rest of the audience, I believe it's quite standard." (FG1_Q3)* *"The content is very interesting for us, but it needs to be more direct and easier to navigate. Additionally, we are mentally accustomed to a specific type of website, where you click and dropdown menus appear, or you click on an image, and it flips. So, you're kind of expecting that type of experience." (FG1_Q4)*
Navigation	Improve intuitive navigation	*"I was suggesting that, in some way, when you hover the mouse over a title, it should be highlighted or enlarged. The text is very small, very cramped, and hard to read. Also, maybe an icon or something that would help to understand the reading better." (FG2_Q3)* *"Well, more or less, because the search function was also similar. What she mentioned about the menus as well. Yes, giving more visibility to certain things, and the text seemed a bit small to me too." (FG2_Q4)*
Information and resources	Downloadable materials and information on local resources	*"Perhaps a section in the menu or an environment where downloadable tools, worksheets, or memory workshops could be available? (…) Even if it's just exercises, so that they can have activities at home (…) maybe basic guidelines for things they can do or ways to assist at home. I think that would be great." (FG1_Q5)* *"I would also like to see games and activities, or places to visit with the family member. My husband... so, it would be great if there were things to do in Barcelona, for example." (FG2_Q5)*

profiles through a more intuitive web design to facilitate navigation (FG2_Q3).

Overall, quantitative findings indicate a generally high level of usability, accessibility, and intention to use the platform, while qualitative findings bring valuable nuance to this picture. The qualitative results reveal specific challenges in navigation and visual design that are not fully captured through standardized metrics alone and allow a more detailed identification of future improvement needs.

DISCUSSION

While the findings of this study offer valuable insights into the development and evaluation of a digital platform for family caregivers of individuals with Alzheimer's disease, several limitations must be acknowledged. A primary limitation concerns the representativeness of the sample. Participants were individuals already engaged with the foundation's activities and may therefore have had higher levels of motivation, digital literacy and prior exposure to digital interventions. As such, the sample may not fully capture the experiences or needs of the broader caregiver population, particularly those who are digitally excluded, less familiar with online resources, or outside the foundation's outreach networks. Additionally, the demographic profile—relatively younger caregivers with an average age of around 57 years and a high percentage of individuals with university education (62.5%)—limits the generalisability of the results to older caregivers, who often experience greater challenges related to digital access and literacy.

Despite these limitations, the study's results align with broader trends in the integration of digital technologies into health and caregiving contexts. They reinforce the importance of designing digital interventions grounded in a comprehensive conceptual framework that addresses usability, accessibility, and perceived utility. The findings highlight both the strengths and areas for improvement in the AA platform, reinforcing the importance of user-centred design in digital health interventions (McCabe, You, & Tatangelo, 2016; Mansfield et al., 2023). One of the main findings from the evaluation is the high accessibility and intention to use ratings of the platform, both with an average of 4.5.

Furthermore, although the score obtained suggests that caregivers found the platform easy to access and navigate, the qualitative findings suggest that some aspects of the website need to be improved to make it accessible to the different profiles of caregivers. This implies that in the ongoing development of the AA platform, the impact of the digital divide is a relevant aspect. As noted, caregivers over 65 exhibit significantly lower digital literacy levels than younger users (Fernández-Ardevol et al., 2023). In Catalonia, 23.7% of caregivers over 65 self-reported having low or basic digital skills, compared to only 7.7% among those under 65. These disparities suggest that the platform must incorporate digital literacy support mechanisms, such as guided tutorials, voice navigation, and simplified interfaces. Ensuring accessibility for all users aligns with best practices in digital inclusion and user-centred design (Asan et al., 2018; Wetzlinger et al., 2014). The platform's perceived usefulness received a lower rating (3.4), indicating that while caregivers find it easy to use, it may not fully meet their needs. This aligns with previous research suggesting that digital caregiving tools must go beyond usability and address specific informational, emotional, and functional needs (Fundació Pasqual Maragall, 2022; Piromalli et al., 2023).

Usability, defined as "the extent to which a system, product, or service can be used by specific users to achieve specific goals effectively, efficiently, and satisfactorily" (Sauro & Lewis, 2012), is a critical component of user experience. In this study, it was rated at 74.3/100, suggesting that the platform meets an acceptable standard but has room for improvement. In this sense, qualitative findings further emphasise the need for enhanced visual presentation and accessibility features, particularly for caregivers with limited digital literacy and studies have shown that a well-designed user interface significantly improves engagement and satisfaction among older users (Wittich et al., 2023; Block et al., 2020).

The concept of user experience extends beyond usability to encompass emotional and psychological responses to technology (Bangor et al., 2009; Brooke, 1996). Given that caregiving for AD patients is a highly demanding and emotionally taxing role, digital tools should provide not only functional support but also emotional relief. Future improvements to the AA platform could include more personalised content recommendations, access to virtual support groups, and real-time professional assistance, aligning with previous findings on digital caregiving interventions (Lewis et al., 2010; Van Der Roest et al., 2010).

Moreover, the AA platform's effectiveness must be evaluated in terms of its ability to promote engagement and sustained usage. Research indicates that caregivers benefit most from platforms that integrate seamlessly into their daily routines and offer tangible value in caregiving tasks (Boutilier et al., 2022; Chiu et al., 2009). Given that caregivers often experience high stress and limited time, digital tools should prioritise efficiency, ease of access, and the delivery of meaningful content. Gamification techniques, progress tracking, and tailored recommendations could enhance user engagement and motivation to continue using the platform (Jegundo et al., 2020).

The broader implications of this study reinforce the potential of digital platforms to address the unmet needs of Alzheimer's caregivers. Systematic reviews have underscored the importance of multi-faceted interventions that combine education, emotional support, and practical assistance (McCabe, You, & Tatangelo, 2016; Mansfield et al., 2023). The AA platform's development follows this holistic model, integrating multiple features to support caregivers in various aspects of their roles. However, continuous evaluation and iteration are necessary to refine these components and ensure their effectiveness, and keep them up to date with emerging needs and technological advancements.

CONCLUSION

This study evaluated the usability, accessibility and usefulness of the AreaAlzheimer web platform. The research used a mixed methods approach, employing different quantitative and qualitative research techniques to understand both the technical application of a digital tool and the social and emotional implications for users.

Specifically, the evaluation results of AreaAlzheimer indicate that while the platform is generally well-received, usability improvements are necessary to enhance accessibility, particularly for older caregivers facing digital literacy challenges. Future development should focus on optimising the user interface, providing additional support resources, and ensuring seamless access to information and peer support networks. By addressing these factors, the AA platform has the potential to serve as a digital resource for caregivers, contributing to improved care quality and caregiver well-being.

Furthermore, this work highlights the potential of the platform to respond to previously identified unmet needs, such as access to trusted information, emotional and logistical support, and facilitation of support networks among caregivers. The priority given to these elements in the design of the platform highlights the need to consider the subjective experiences of caregivers as central to the creation of technological resources.

While the AreaAlzheimer platform demonstrates strong accessibility and user engagement, its lower usefulness rating and usability challenges highlight areas for further improvement. This lower rating is consistent with the platform's current pilot phase, where the content and services portfolio are not yet sufficiently developed, which may contribute to caregivers feeling that their needs are not fully addressed.

The AreaAlzheimer Platform (AA) is not only an innovative resource for caregivers but also serves as a valuable case study for future research into the implementation of digital solutions in health and care. This project confirms the importance of an interdisciplinary approach that combines technology, user-centred design and a holistic model of care. Future research should focus on long-term user engagement, evaluating how caregivers interact with the platform over extended periods, and identifying strategies to enhance retention. Additionally, cross-cultural studies could assess the platform's adaptability in different socio-economic and linguistic contexts, ensuring that digital caregiving solutions remain inclusive and globally relevant.

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