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Online interventions for caregivers of people with dementia: a systematic review

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Introduction. The elderly population is growing driven by the increase in life expectancy, which in turn entails an increase in the number of people with chronic diseases such as dementia. The vast majority of people suffering from this illness is assisted by informal caregivers, who play a key role in fulfilling the patients' needs, promoting the possibility for people with dementia to live in their home environment. The Internet as a support tool in psychoeducational programs can significantly improve accessibility of them, becoming a currently consolidated interactive resource for the training of patients with acute and chronic diseases, and their caregivers.

Population and method. A literature search of the Pubmed, PsyINFO, Scopus, SciELO and Psicodoc databases was performed to systematically review those studies related to web-based interventions for informal caregivers of people with dementia or cognitive impairment.

Results. On balance, the studies show a significant improvement after the psychoeducational intervention. Specifically, the improvement in caregivers' wellbeing can be observed in the measures for self-efficacy, anxiety and depression.

Conclusions. Online interventions are a promising strategy for the care of people with dementia. It would be advisable to perform further randomized trials to assess the reasons for lack of adherence to intervention, as well as usability studies to test the different software programs used.

Keywords: Caregivers, Online intervention, Dementia, Psychosocial intervention, Psychoeducation

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Intervenciones online para cuidadores de personas con demencia: revisión sistemática

Introducción. La población de edad avanzada está creciendo debido al aumento de la esperanza de vida, lo que lleva a un incremento de personas con enfermedades crónicas, como la demencia. La mayoría de la población que sufre esta enfermedad es atendida por cuidadores informales, quienes juegan un papel muy importante en el cumplimiento de las necesidades, favoreciendo que puedan seguir viviendo en su ambiente. Internet se presenta como una herramienta de apoyo a los programas de psicoeducación que mejore la accesibilidad de los mismos, estableciéndose, en la actualidad, como un recurso interactivo para la formación de pacientes con enfermedades agudas y crónicas así como a sus cuidadores.

Población y método. Mediante una búsqueda bibliográfica en las bases de datos Pubmed, PsyINFO, Scopus, SciELO y Psicodoc, se revisaron sistemáticamente los estudios relativos a intervenciones basadas en internet para cuidadores informales de personas con demencia o deterioro cognitivo.

Resultados. En conjunto, los estudios indican una mejoría significativa tras la intervención psicoeducativa. Concretamente, la mejora del bienestar de los cuidadores se aprecia en las medidas de autoeficacia, ansiedad y depresión.

Conclusiones. Las intervenciones online constituyen una estrategia prometedora para la intervención de cuidadores de personas con demencia. Serían convenientes mayores estudios aleatorizados, que evalúen tanto los motivos de falta de adherencia a la intervención como estudios de usabilidad de los diversos programas de software empleados.

Palabras clave: Cuidadores, Intervención online, Demencia, Intervención psicosocial, Psicoeducación

INTRODUCTION

The elderly population is growing exponentially, partly driven by the increase in life expectancy[1]. In 2015, the total estimated worldwide cost of healthcare was 818 billion dollars and, because of the significant increase in the number of elderly individuals, the number of patients with dementia is also expected to grow in the near future[2], which means that by 2030 dementia care costs will have increased by 85%. Thus, dementia is probably the most costly disease in our society[1].

Most people with dementia live at home and are assisted not only by their partners or other relatives[3,4], but also by neighbors or friends[5] who play the role of unpaid informal caregivers[4]. The continued support provided by these informal caregivers often becomes an important psychological and somatic burden. Furthermore, the task may prove difficult, requiring them to face new or stressful situations because of their having to deal with a wide range of care conditions, some of them complex, such as those involving disturbed behavior[2,3,5]. Added to all this, care demands increase as dementia and loss of functionality progresses[2]. Consequently, informal caregivers play a critical role in the fulfillment of the needs of people with dementia, making it possible for them to continue living in their home environment (with their families) for as long as they can[6], delaying or preventing institutionalization[6,7] and thus reducing costs associated with senior housing. However, these efforts have a health impact on informal caregivers, who may experience mental health problems such as stress overload, depression or anxiety[6,8] that significantly worsen their quality of life[9] and may even increase social isolation[7].

Therefore, given the unlikelihood of finding a curative treatment for dementia in the near future, added to the growing costs of care, there is a pressing need to create effective interventions for caregiver support. This should lead to a reduction in caregivers' morbidity and an improvement in the quality of the care provided to thereby improve the quality of life of the person with dementia. Thus, numerous psychosocial interventions aimed at addressing the needs of both patient and caregiver[9] have been developed to provide support for informal caregivers of patients with dementia[3,4,7,10]. The purpose of such interventions is to provide the patient's family with the means to adapt to changes and deal with dementia[9] and to delay institutionalization[11]. In this regard, psychoeducational programs have proved effective in providing caregivers with the knowledge they need to fulfill their role, helping to alleviate their distress[12], training them cope with everyday demands and contributing to the dignity and autonomy of the person with dementia[9]. There is current evidence of their efficacy and usefulness[13,14], which is why their employment has been included in clinical guidelines for dementia care[15,16].

Nevertheless, one of the challenges faced by caregivers living in rural areas[17,18] is access to psychoeducation, which can prove extremely difficult because of the geographical barriers of distance and transport to reach treatment facilities, or because the lack of someone to replace them would involve leaving the person they are in charge of alone for too long[12]. Moreover, the needs of caregivers living in rural areas are greater, since they receive less support and their requirements are usually of a more complex nature[19].

Accordingly, improving the accessibility of psychoeducational programs for people living in the countryside is a public health priority. Because of its remarkable contribution to training, information and even marketing, the Internet could be a useful tool to address this issue. This also leads to suggest the Internet as a tool to support and complement psychoeducational programs by improving accessibility of them. Thus, several Internet-based strategies have been launched in recent years as an interactive resource for the training of both patients suffering from acute and chronic conditions, and their caregivers[12] at very low costs[12]. Additionally, Internet interventions offer the possibility of gaining access to the information in the intimacy of their homes, without leaving the person they are in charge of alone[3,6], adapting interventions so that the requirements to be met by each caregiver also include their own care in the light of their particular situations[6]. Another highlight of Internet interventions is the privacy under which they are carried out, which is appealing even to those caregivers who believe they do not need help[6]. Likewise, the rapid growth in the number of elderly Internet users in recent years[3] underlines the relevance of research on Internet interventions as a source of support for this group[20].

This is why interventions through information and communication technologies (ICT), which include the Internet, could help to train future caregivers so that they may successfully deal with the challenges involved in caring for someone with dementia, keeping them at home for as long as possible[3,21]. Nevertheless, further research on how these technologies are being used in the psychoeducation of caregivers of people with dementia is still needed to assess their potential for future implementation.

AIM

The purpose of this study was to carry out a systematic review of the Internet interventions aimed at caregivers of people with dementia that have taken place in the last 5 years (2010-2015), which are expected to be effective in improving caregivers' quality of life while reducing the incidence of diseases associated to their activity.

METHOD

Search strategy

A systematic search of the literature included in the Pubmed, PsyINFO, Scopus, SciELO and Psicodoc databases was conducted. The search was limited to studies in English and Spanish on Internet-based interventions for informal caregivers of people with dementia or cognitive impairment. Key words in English (Table 1) and in Spanish (Table 2) were introduced, limiting the search to the period between 2010 and 2015, as there was already an earlier review covering the previous period[3]. The search fields were title, abstract and key words for the last quarter of 2015. The results were exported into EndNoteX[7] reference management software and converted into a database.

The review was conducted according to the PRISMA quality criteria for bibliographic reviews[22] listed in annex 1.

Study selection

The studies selected for this review met the following inclusion criteria: (i) they report the quantitative and/or qualitative results of an intervention; (ii) they are based on the use of the Internet; (iii) they are meant for informal caregivers (nonprofessionals); and (iv) the intervention reported is meant for caregivers of patients with mild cognitive impairment or dementia, excluding other conditions. Articles where intervention is fully aimed at patients rather than caregivers were excluded.

The selection of articles was entrusted to two researchers, checking agreement between them and, when otherwise, resorting to a third member of the team to take a consensus decision.

Figure 1 shows the selection process using a PRISMA flow diagram. The search yielded a total of 19,675 intervention studies, 7 of which met the inclusion criteria. The implications of all of those describing Internet-interventions for informal caregivers of people with dementia were analyzed.

RESULTS

Study characteristics

All the studies were aimed at improving the performance of informal caregivers. However, the studies selected were heterogeneous in several aspects such as their design, participants, duration and characteristics of the intervention (Table 3).

Table 1 Number of articles yielded by the keyword reference search of English-language databases

Keywords	Databases		
	PubMed	PsycINFO	Scopus
Caregivers and dementia	2020	61	3285
Internet-based program	805	31	1007
Psychosocial Interventions	1430	1306	2223
Caregiver stress	3456	216	3616

Table 2 Number of articles yielded by the keyword reference search of Spanish-language databases

Keywords	Databases	
	SciELO	Psicodoc
Cuidadores	12	83
Intervención online	-	-
Demencia	26	98

First of all, designs differed substantially from one study to another, as well as the number of participants in them, which ranged from 11[23] to 150[7]. Likewise, there were also differences in the length of participation, which ranged from 8[24] to 12[25] weeks of intervention. The characteristics of the interventions also varied: website providing support for several aspects of care delivery[24], website including additional care delivery strategies[12], website combining individual work and support from healthcare professionals[26], website for exchanging experiences with other caregivers online[23,27] and, finally, website including chat or video chat communication[27].

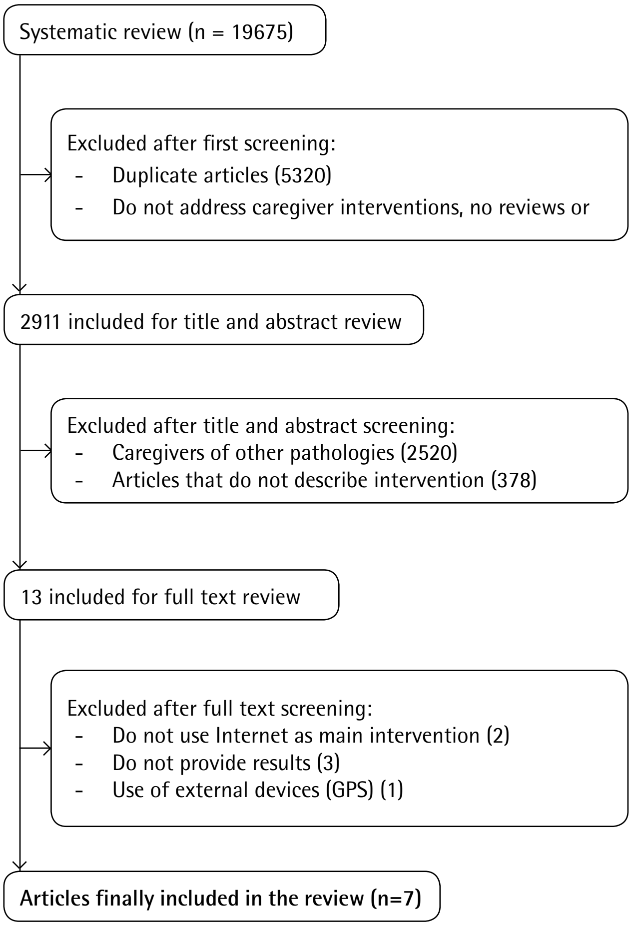

Figure 1 *Article search and selection process related to online intervention for caregivers of people with dementia*

In all of them, the program was tailored to meet the needs expressed by informal caregivers performing care delivery work[24,26], and in one of the studies participants were guided by a trainer, in this case a healthcare professional[26].

Out of the 7 studies in the review, 4 included a control group, the conditions of 3 of them consisting of receiving regular assistance[7,24,25]; one of them included 7 face-to-face weekly sessions with a social worker or nurse[23]; and two did not include a control group[12,26].

Conversely, information regarding intervention length is rather vague, varying from one study to another but with no accurate data on the actual time caregivers spend connected to the online intervention website, nor on whether access was limited to a certain timespan or whether it was available for as long as they considered necessary[24]. Even so, certain studies reported fixed intervention timespans in the form of previously agreed weekly sessions[23,26], and one of them described one 15-30 minute weekly session with no real-time limitation and the possibility for users to access the different sections of the site[25].

The most frequently considered variables were stress, workload, depressive symptoms, anxiety, self-efficacy, care-related knowledge/skills, use of healthcare services and overall health. Some of the studies also included additional aspects focused on caregivers' quality of life, goals attained and the positive side of care delivery. Lastly, one of them included mental health assessment[24].

Intervention results

Largely, all the studies report significant improvements after psychoeducational intervention. Specifically, the improvements in caregivers' wellbeing can be perceived in the measures related to self-efficacy[25-27], anxiety and depression[24]. Likewise, there is a clear increase in their knowledge of the disease[23, 25], acquired competences[12,24] and functional autonomy[27]. Alongside this, there is a reduction in stress[7] and in caregivers' perception of the threats and risks posed to their health[26]. Furthermore, one of the studies shows that caregivers felt able to accomplish their previously set goals[26].

Some studies reported a lack of significant results associated with Internet intervention. One of them stated no improvements in caregivers' quality of life[12,24], another described the same for their coping skills[26], while a third found no significant differences in feelings of self-efficacy and support[12]. Conversely, the control group showed improvements regarding anxiety, depression and quality of life, while the experimental group receiving online intervention did not[23].

Finally, only 4 of the studies approach usability through qualitative interviews[27] or questionnaires[12,24,25], which show the results associated with user-friendliness and easy access[12,24,25,27], as well as the relevance of use for caregivers[24].

In qualitative terms, certain studies approached caregivers' experience as an additional result of intervention by conducting qualitative interviews and surveys after intervention. The data obtained report greater knowledge of the disease and its care[12,23] and an increase in caregivers' confidence in their abilities when performing their task[12,23,26].

DISCUSSION

The aim of this review was to deliver an assessment of the efficacy and feasibility of online interventions for

Table 3 Online interventions for caregivers of people with dementia

Program	Author / year	Design	Implementation	Sample and study population	Diagnosis	Measurement instruments	Results	Usability
Diapason	Cristancho-Lacroix et al., 2015	ECG. Post at months 3 and 6	Online. 12-week intervention	EG= 25; CG=24 IC	AD	PSS-14; SES; RMBPC; ZBI; BDI; SPH; MMSE	No differences between EG and CG in SES p=0.98. Knowledge of disease improvement in EG p=0.008	Useful, clear and comprehensive program. Needs more dynamic content and interaction with supporters and participants
iCare Stress Management e-Training Program	Kajiyama et al., 2013	ECG. Post= 3 months	Online	EG= 75; CG=75 IC	AD,VD, OD	PSS; RMBPC; CES-D; PQoL	PSS for CG p=0.003; RMBPC between EG and CG p=0.060; CES-D between GE and GC p=0.259; PQoL between EG and CG p=0.118. EG Greater benefits from RMBPC when variable contamination is controlled (p=0.49; $\eta2$=0.038)	—
—	Lai et al., 2013	ECG + quantitative and qualitative measures	Online workshop. 7-week intervention	EG= 3; CG=8 IC	UD	CESDS; GHQ-30; ADKT; ZBI; WHOQoLM-Brief	Greater knowledge acquired in EG; decrease in anxiety and depression in CG; CG= GHQ-30 p=0.030 and WHOQoLM-Brief p=0.030. ADKT between GE and GC p=0.030	—
Caring for Me (CFO) Web Site and Training Manuals	Marziali et al., 2011	QNCG. Post= 6 months + Qualitative	Online. 1 Chat group, 1 Video group	ChatG(G1)= 40; VideoG(G2)= 51	UD	EPO-R; RSCS-E; MSPSS; HSQ-12; CES-D; SMAF	Significant improvement of G1 and G2 on the RSCS-E $p \leq 0.04$; G2 better in HSQ-12 $p \leq 0.02$ and lower scores in mental and cognitive care in SMAF $p \leq 0.02$; G1 score lower than G2 in AIVD according to SMAF $p \leq 0.02$	Qualitative through interview. G1= No Access difficulty; G2= technical problems with videoconference

Table 3 Continuation

Program	Author / year	Design	Implementation	Sample and study population	Diagnosis	Measurement instruments	Results	Usability
Online Stress Management Training Program	Ducharme et al., 2011	ENCG. Quantitative and qualitative measurements	Online. 7 sessions supported by a healthcare professional (nurses)	EG= 26 IC	FI/CI	15-SES; SAM; health risks, GAS; 38-CAMI	15-SES p=0.005; SAM P (perceived threat p=0.03; perceived change p=0.05; control p=0.4); health risk p=0.007	—
DEMentia-specific Digital Interactive Social Chart (DEM-DISC)	Van der Roest et al., 2010	ECG	Online. 2-month intervention. Support for specific aspects of care	EG=14; CG=14 IC	UD	CMS; GHQ-28; CES-D; NPI; MMSE; GDS; CANE; SSCQ; PMS; QoL-AD	Type of dementia confusion factor in CANE for people with dementia. EG > CANE than CG p=0.05; EG > SSCQ than CG in posttest p=0.03	Through questionnaire. Easy to learn (m=1.75, SD=0.69) and use (m=2.52, SD=1.19). DEM-DISC only relevant in early stages of dementia
Internet-Based Savy Caregiver (IBSC)	Lewis et al., 2010	Iterative process in the development of content and formative assessment. Quantitative and qualitative analysis	Online. Consent form and demographic information. Additional care strategies	EG= 47 IC	UD	CS, PS	Changes in fulfilled patients' needs p=0.025; in caregivers p=0.00. Changes in feelings of competence p=0.03. Changes in number of needs, self-efficacy, assistance, usage, quality of life, services, knowledge are not significant	Likert-type questionnaire on usability, clarity and amount of information, and format convenience, as well as issues related to the program's effect on the caregiver's skills, strategies and knowledge. Open-ended questions on strengths and weaknesses, time to complete the program, usefulness, improvement suggestions, and what the participant would tell others about the program

Design: ECG= experimental with control group; ENCG= experimental with no control group
Sample and study population: CG= Control group; EG= Experimental group; IC= Informal caregiver
Diagnosis: AD= Alzheimer's disease; VD= Vascular dementia; OD= Other dementias; FI: Functional impairment; CI= Cognitive impairment; UD= Unspecified dementia
Measurement instruments: 15-SES: 15-item Self-Efficacy Scale; 38-CAMI= Carers' Assessment of Managing Index; ADKT= Alzheimer's Disease Knowledge Test; AIVD= Actividades instrumentales de la vida diaria; BDI= Beck Depression Inventory; BSFC= The 28-item Burden Scale for Family Caregivers; CANE= Camberwell Assessment of Need for the Elderly; CCS= Caregiver Competence Scale; CES-D: Center for Epidemiological Studies Depression scale; CMS= Caregiver Management Style; CS= The Caregiver Subscale; CSGC= Quasi-experimental with no control group; EPO-R= Eysenck Personality Questionnaire Revised; GAS= Goal Attainment Scale; GDS= Global Deterioration Scale; GHQ-28= General Health Questionnaire 28; GHQ-30= General Health Questionnaire-30; HSQ-12= Health Status Questionnaire-12; MMSE= Mini-Mental State Examination; MSPSS= Multidimensional Scale of Perceived Social Support; NPI= Neuropsychiatric Inventory; OARS= Multidimensional Functional Assessment Questionnaire; PAC= Positive Aspects of Caregiving; PCD= Personas con demencia; PMS= Pearlin Mastery Scale; PQoL= Perceived quality of life; PS= program subscale about usability, clarity, amount of information and format; PSS= Perceived Stress Scale; QoL-AD= Quality of Life Alzheimer's Disease scale; RMBPC= Revised Memory and Behavior Problems Checklist; RSCS-E= Revised Scale for Caregiver Self-efficacy; RWC= Revised Ways of Coping; SAM: Stress Appraisal Measure; SMAF= Functional Autonomy Measurement System; SPH= Self-Perceived Health; SRH= The Self Rated Health; SSCQ= Short Sense of Competence Questionnaire; STAI= State-Trait Anxiety Inventory; WHOQoLM-B= World Health Organization Quality of Life Measure-brief version; ZBI= Zarit Burden Interview.

Annex 1 PRISMA quality criteria

Section / topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	1
INTRODUCTION			
Rationale	3	Describe the rationale of the review in the context of what is already known.	3-5
Objectives	4	Provide explicit statement of questions being addressed, with reference to participants, interventions, comparisons, outcomes and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g. Web address), and, if available, provide registration information including registration number.	Not done
Eligibility criteria	6	Specify study characteristics (e.g. PICOS, length of follow-up) and report characteristics (e.g. years considered, language, publication status) used as criteria for eligibility, giving rationale.	5
Information sources	7	Describe all information sources (e.g. databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	5
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Tables 1 and 2
Study selection	9	State the process for selecting studies (i.e. screening and eligibility processes included in the systematic review and, where applicable, in the meta-analysis).	Figure 1
Data collection process	10	Describe method of data extraction from preliminary studies (e.g. registration protocols used independently by two or more encoders), and any processes for obtaining and confirming data from reviewers.	6
Data items	11	List and define all variables recorded in the studies (e.g. PICOS, funding sources), and any assumptions and simplifications made in the process.	Not reported
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias in individual studies (specifying whether this was done at the study or outcome level), and how this information is to be used in possible meta-analytical statistical analyses.	Not done
Outcome measures	13	State the main effect measures (e.g. risk ratio, difference in means).	Not reported
Synthesis of results	14	Describe the methods of handling data and combining results of studies; if meta-analyses have been conducted, include measures of consistency used (e.g. I2) to analyze heterogeneity of effects.	Table 3
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect cumulative evidence (e.g. publication bias, selective reporting within studies).	Not done

Annex 1 | **Continuation**

Section / topic	#	Checklist item	Reported on page #
METHODS			
Additional analyses	16	Describe methods of additional analyses (e.g. sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	Not done
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	Figure 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g. study size, PICOS, follow-up period) and provide bibliographic references.	Table 3
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Not done
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) summarized data for each intervention group and (b) effect estimates and confidence intervals, ideally with a forest plot.	6-8
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency (heterogeneity).	6-8
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see item 15).	Not done
Additional analyses	23	Give results of additional analyses, if done (e.g. sensitivity or subgroup analysis, meta-regression see item 16).	Not done
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g. healthcare providers, users and policy makers).	8-11
Limitations	25	Discuss limitations at study outcome level (e.g. risk of bias) and at review-level (e.g. incomplete retrieval of identified research, reporting bias).	10
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	10-11
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g. supply of data); mention role of funders in systematic review.	11

informal caregivers of people with dementia through the review of published research literature. This type of interventions could prove a relevant tool in improving accessibility to psychoeducational programs for caregivers living in areas without access to services or for those whose caregiving tasks do not allow them to reschedule.

However, despite the heterogeneity of methodologies and characteristics of the studies found, which complicates comparison of results, the impact of Internet interventions is clearly positive, as well as the fact that they can improve the wellbeing of informal caregivers.

Firstly, the presence of other caregivers and a therapist has a noticeable effect[26]. Programs that allow direct contact with other caregivers have positive effects that involve an increase in impressions of self-efficacy and a reduction of caregivers' stress, depression and workload[25-27]. In this regard, it seems that the online presence of other caregivers is perceived as positive[23], as a way of breaking isolation[7,26] and normalizing the situation[26]. Likewise, the participation of a reference professional supporting the online intervention also appears to favor achievement of the intervention's purposes by working on increasing caregivers' involvement with the online intervention and thus reinforcing confidence to implement the strategies learned[3], all of which contributes towards improving assistance and the quality of life of the person with dementia[23,26], as is the case with other disorders such as depression[3]. Accordingly, it would be important to foster the development of group interventions online under the guidance and support of a therapist.

Secondly, it should be noted that only four of the studies include a control group as a means of comparing the intervention carried out[7,23-25]. This limits the robustness of the results and the possibilities of reaching sufficient levels of evidence, which makes the inclusion of a control group advisable to ascertain the efficacy of the intervention.

Thirdly, the studies reviewed do not include enough information on compliance with or adherence to intervention. Consequently, there are no criteria to define the limits between adequate and inadequate compliance with the intervention. Only one of the studies reported the frequency and duration of each session, but with no real-time limits and the possibility to access the different sections of the website[25]. According to Boots et al.[3], it may be complicated to decide when compliance is acceptable because of the difficulties in determining the intensity, length and frequency of the sessions caregivers take part in[3], there being only one earlier study where the exact frequency of exposure is specified, yielding positive results for 32-minute sessions[28]. It should also be noted that one of the reasons to criticize online intervention could be that monitoring, follow-up and involvement could be adversely affected by the lack of a person (therapist) before whom to respond face-to-face in cases of noncompliance. This is why it is recommended that future studies consider this variable with greater accuracy, which is quite easy to do using digital tools.

In the fourth place, the absence of a systematic usability assessment can be observed. Only 4 of the studies reviewed[12,24,25,27] include usability analyses, although the heterogeneity of their assessment procedures does not allow a sufficiently reliable determination of the aspects that should be improved to facilitate the use of these technologies. In this regard, and even though psychoeducational intervention through the web offers the chance to access this type of therapy, it must be stressed that caregivers frequently lack adequate computer skills, which emphasizes the importance of measuring the usability of the technology employed. It could even be advisable to establish certain guidelines for a more accessible and user-friendly design that contemplates the group such intervention is intended for.

This is not without limitations, which means that results should be interpreted with caution. The possibility of adding a meta-analysis of the reviewed studies was initially considered; however, it proved impracticable because of the difficulty in integrating the results, since the use of different software in itself influences usability and even implementation of the program. Therefore, the suggestion that one study may be more effective than another could be related to the program implemented and its usability, or even to the type of psychoeducational program, rather than to its application format. Accordingly, online intervention programs are more or less effective depending on the program used rather than on the global format.

Nevertheless, it should be noted that the results may be assessed as optimistic and that, partly for this reason and because of the gradual spread of new technologies, distance support for caregivers of people with dementia is increasing[3,29,30], as are telephonic interventions[10,31].

It would be useful for further studies to conduct a comparative analysis of the different online intervention methods, and also to include randomized controlled trials with a larger number of caregivers and where both the reasons for non-adherence to the intervention and the usability of the different software programs employed are addressed.

In conclusion, and based on the studies reviewed, intervention heterogeneity and design appear to be poorly controlled. It would be convenient to conduct larger randomized studies addressing both the reasons for non-adherence to intervention and the usability of the different software programs employed. Nevertheless, internet-based psychoeducation seems an acceptable intervention methodology and at least as effective as face-to-face approaches, its function being fostered by guided interventions and the presence of a therapist. This should not lead to consider online-based psychoeducation as an alternative to traditional intervention, but rather as a complement to make accessibility to intervention easier for caregivers that cannot receive this support face-to-face, thus standing out as a promising strategy in intervention for caregivers of people with dementia.

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