

Caring for Dementia Caregivers in Times of the COVID-19 Crisis: A Systematic Review

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Abstract Dementia is progressive and deteriorates during the progression of the disease affecting several millions of older people worldwide. The burden of caring for people with dementia is enormous and caregivers face serious psychological challenges from their caregiving roles. Dementia caregivers are exposed to psychological distresses such as stress, anxiety and depression. While there is robust literature on caregiver burden and their psychological effects, there are gaps in current knowledge about how best caregivers get the support that they need in order to prevent themselves from becoming the hidden victims, especially in unprecedented times such as the coronavirus 2019 (COVID-19) crisis. The aim of this paper was to apply the preferred reporting items for systematic reviews and meta-analysis (PRISMA) guidelines to conduct a systematic review of psychological and psychosocial outcomes. Targeted outcomes included stress, anxiety, depression, mental wellbeing, caregivers' support, psychosocial and psychological interventions. We searched for relevant articles using PubMed, Google Scholar, Science Direct, and ProQuest. We used search terms from the keywords to identify publications that were most relevant to our questions. Eight papers were finally selected and reviewed. Findings showed that dementia caregivers are mostly informal/family caregivers, mostly female and lack the knowledge about dementia. Further, findings revealed that dementia caregivers can be isolated from mainstream society. Consequently, they suffer from care burden and other psychological problems. Dementia caregivers can benefit from internet-based or web-based interventions. Although there are inconsistencies in methodological approaches of the various interventions, the interventions are effective. Findings further revealed that dementia caregivers are isolated from mainstream society due to the nature of their caregiving roles, and can access effective psychosocial and psychological interventions via the internet-based or web-based especially in unprecedented times such as the COVID-19 crisis.

Keywords: stress, anxiety, depression, people with dementia, coronavirus 2019 (COVID-19), dementia caregivers, caregiver burden, psychosocial and psychological outcome

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1. Introduction

Dementia affects several millions of people worldwide [1,2]. Dementia is progressive and deteriorates with severe conditions as a result of loss of brain function during the progression of the disease [3]. As a result of global ageing, the number of people affected by dementia increases exponentially and this continues to increase as people age [2,4,5,6,7,8]. The continuous deterioration caused by the disease makes those who are affected require more care. Consequently, people with dementia require assistance to perform activities of daily living (ADLs) such as bathing, clothing, feeding and using the toilet [9,10]. Dementia caregivers' wellbeing can be promoted, improved and maintained by applying treatment modalities such as pharmacological, psychological and psychosocial interventions.

Some identified comorbidities of dementia are stress, anxiety and depression (SAD) [11]. The burden of caring for dementia sufferers is enormous [1], primarily resulting from the behavioural and psychological symptoms of the disease [12]. Caregivers often experience high caregiver burden that negatively impacts their mental wellbeing [3,5,12]. Caregivers' burden is associated with health problems such as compassion fatigue that force some family caregivers to relinquish care roles of their loved ones to long-term care [13]. Dementia caregivers can be categorised into informal/family caregivers and formal/professional caregivers [7,9]. The informal caregivers' role is gendered. Carers are mainly females such as close relatives, friends, spouses and daughters [7,14].

Caregivers are not only often exposed to high levels of stress, anxiety, and depression [6,12,15], but are equally exposed to sleep disturbances [6], frustration and hopelessness during their caregiving roles due to lack of

knowledge about dementia [16]. Consequently, they risk struggling with negative emotions such as self-criticism and shame [17]. It is evident that cognitive behaviour therapy (CBT) [18], some contemporary CBT approaches such as mindfulness [19,20], compassion focused therapy [21], and some psychosocial approaches such as singing in groups [22], offer hope for people suffering from several psychological distress, such as stress, anxiety and depression. In unprecedented times like the coronavirus 2019 (COVID-19) crisis, it has become extremely challenging for people with dementia and their caregivers as a result of the loneliness brought about by the confinement and isolation that exacerbates the mental wellbeing of dementia caregivers [23,24]. The aim of this paper was to apply the preferred reporting items for systematic reviews and meta-analysis (PRISMA) guidelines to conduct a systematic review of the psychological and psychosocial outcomes. There was the need to answer the following questions: What are the psychosocial and psychological challenges that dementia caregivers are exposed to? What are the best psychosocial and psychological interventions that dementia caregivers can access especially in the present COVID-19 crisis? To answer these questions, a systematic review of studies from January 2014 to April 2020 was conducted.

2. Method

2.1. Literature Search Strategy and Data Extraction

A systematic review of psychosocial and psychological outcomes in dementia caregivers and interventions published not older than six years was carried out. The data were systematically collected, analysed and the findings were synthesised by one of the authors (MA) and text evaluated and assessed by the second author (PHA) for correctness. This was in accordance with the preferred reporting items for systematic reviews and meta-analysis (PRISMA) guidelines to conduct a systematic review [25,26]. Our search and selection exercise commenced on the 21st of March 2020 using the Boolean operators "OR", and "AND" [27]. We used the search terms: stress OR anxiety OR depression OR dementia OR dementia patients AND professional caregivers on PubMed, ProQuest, Science Direct and Google Scholar respectively.

2.2. Inclusion Criteria

Papers published from January 2014 until April 2020 were included. Publications on dementia caregivers, or dementia patients or people living with dementia irrespective of whether they are informal/family caregivers, formal/paid or professional caregivers, caregivers in voluntary service were also included. We ensured that studies included dementia caregivers and interventions for caregiver burden. Interventions included are any that are non-pharmacological, that is, psychological and psychosocial. See Table 1, Figure 1, and Table 3.

2.3. Exclusion Criteria

As can be seen (Table 2), we excluded all publications that were not related to dementia care. Additionally, all caregivers who were not in services of dementia care were excluded.

2.4. Quality Assessment

Quality assessment of the selected literature (Figure 2) was carried out with the aid of a tool for the measurement of multiple systematic review (AMSTAR) and was found to be of moderate quality review paper [28].

3. Results

The article selection process is illustrated in Figure 1. In PubMed 214 articles were identified of which 181 were excluded. Out of the remaining thirty-three articles, nineteen were selected which were further screened for relevance. Five articles were finally kept for consideration to be included. In ProQuest, 1071 publications between 2014 and 2020 were screened and 1036 articles were excluded ($1071 - 1036 = 35$) due to duplication and not being relevant. Out of the remaining 35 only three articles were further considered ($35 - 32 = 3$) for relevance. Out of these three, only two articles were finally selected to be further reviewed. Due to the complexity in using Boolean operators in searching Science Direct, full search terms: Stress, anxiety and depression in caregivers of people with dementia were used and 486 items were identified. Open access journals = 40. That is 446 excluded ($486 - 40 = 446$); from the eleven selected articles six of them were relevant to our research questions, consequently, the articles were included. Search on Google Scholar also used the same method and 17,700 items were generated. We further refined our search by selecting articles that best relate to our research questions. Studies included in this review are (Boots et al. 2014; Cristancho-Lacroix et al. 2015; Egan et al. 2018; Guay et al. 2017; Hurley et al. 2014; Jensen et al. 2015; Stefanopoulou et al. 2019; Zhao et al. 2019). Although it is possible for informal dementia caregivers to access face-to-face interventions, however, due to the round-the-clock nature of their work, they are either isolated or overburdened [29]. Therefore, the application of information and communications technologies (ICTs), that is, web-based or internet-based interventions can be accessed by dementia caregivers.

3.1. Analysis, Synthesis, and Outcomes

Boots et al. (2014) highlighted the application of internet interventions in order to educate and support the needs of informal caregivers at reduced costs. The study further provided an overview of some evidence regarding effectiveness, feasibility, and quality of this intervention for informal dementia caregivers [8]. The Cochrane level of evidence [30] and the criteria list of Cochrane Back Review Group was used to assess the identified studies [8]. The types of interventions, the dosage, and the duration of intervention as well as the quality of methodology

differed widely, and the overall level of evidence was low [8]. Results show that internet interventions for this group is effective for various aspects of caregiver well-being such as depression [8]. Additionally, caregivers may also benefit from using this medium to get in touch with online coaches and other caregivers. There were some limitations such as inconsistency and complexity in the study design making data extraction difficult or impossible [8]. Other limitations are the non-availability of high-quality studies [8]. Important outcomes of this study are effective on caregiver confidence, stress, self-efficacy, and depression [8]. This intervention is multi-component, therefore, it can be combined or used with other approaches. Although there were some limitations of internet interventions, it is a relatively new application that offers hope in improving dementia caregivers' mental wellbeing and quality of life.

Another web-based study [29], a randomised control trial, also suggested that the application of this medium provide care for dementia caregivers in the form of psychoeducation with the aim of using unblinded randomised controlled trial to evaluate the efficacy and acceptability of a Web-based psychoeducational programme in a pilot study for informal caregivers of people with Alzheimer's disease (PWAD) in a mixed methods research design. 49 informal dementia caregivers

of which 25 of them were experimental group (n=25) and 24 of them were control group (n=24) [29]. It was seen that from the baseline to three months, the experimental group significantly improved their knowledge about dementia [29]. However, 17 out of the 25 (71%) of the allocated participants completed the protocol where they attended at least 10 out of the 12 online sessions. The participants used the website on the average of 19.72 times (SD 12.88). They were connected for as long as 262.20 minutes with an SD of 270.74). From the questionnaire to capture the level of their satisfaction, results show that most of the participants (95%, 19/20) considered the programme to be useful, clear (100%, 20/20) and comprehensive (85%, 17/20) [29]. There was a significant correlation ($P=.01$) between relationship and caregivers' opinions [29]. Interestingly, among this group positive opinions (3/3) were reported from husbands and sons while qualified opinions (8/11) came primarily from daughters [29]. Negative expression (2/3) were reported by some female spouses while a neutral opinion (1/3) was reported by a female spouse [29]. The qualitative results, however, showed that this intervention caught the interest of caregivers even though results showed little acceptance, caregivers' expectations were high. This also indicated that caregivers are ready to receive the help that they require. More personalised interventions would be desired.

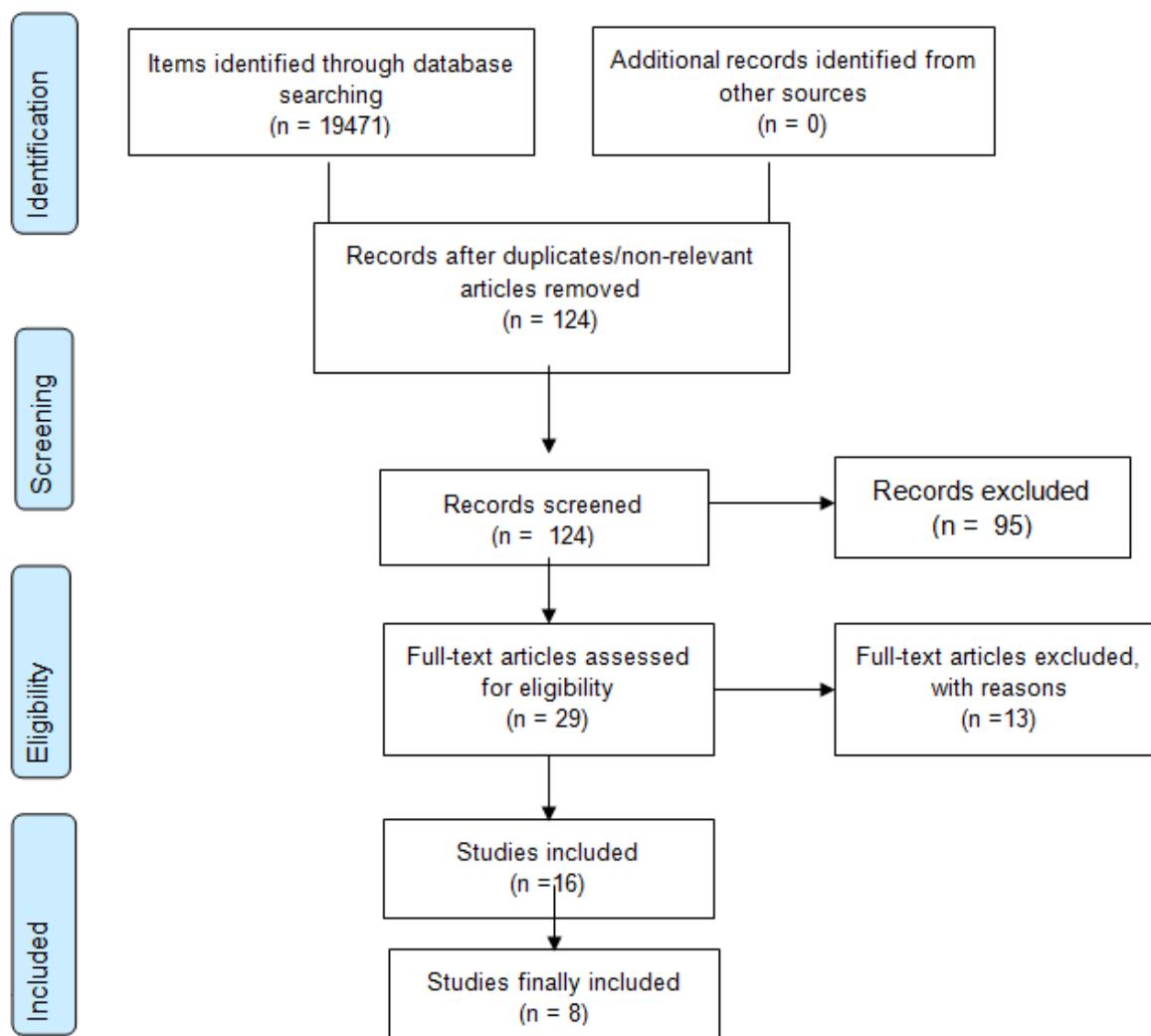


Figure 1. PRISMA Flowchart of articles selection process (Adapted from [56])

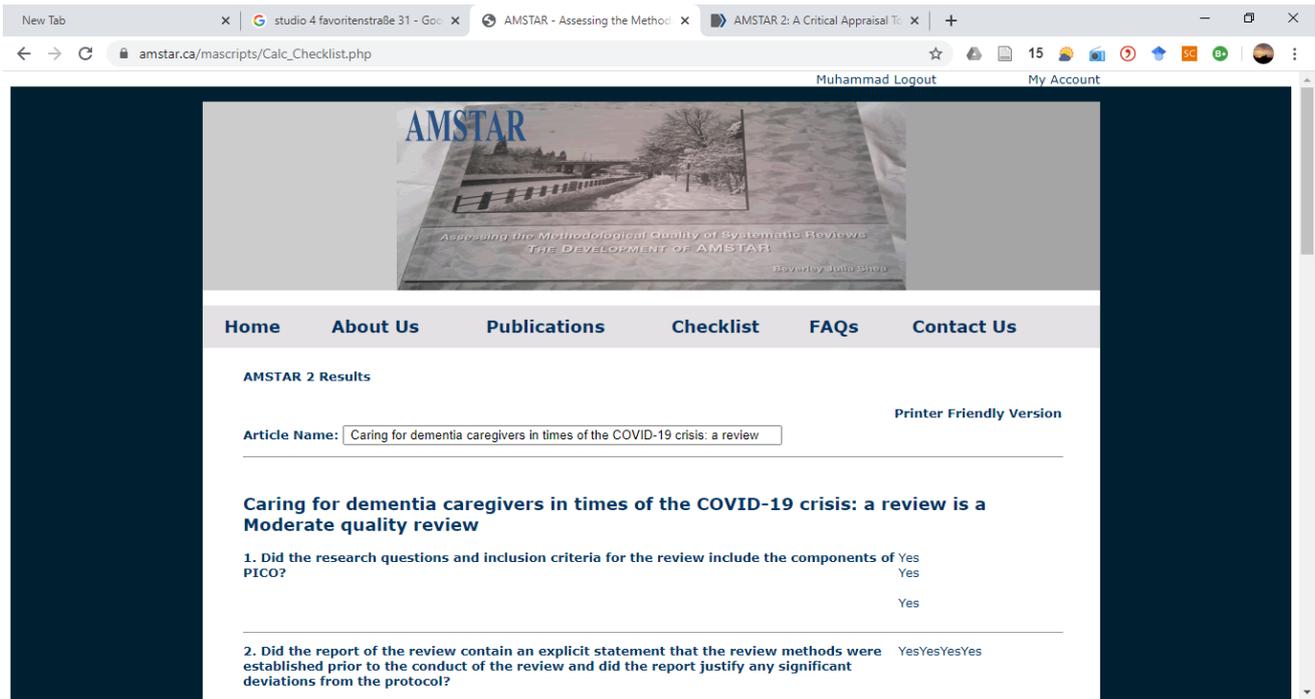


Figure 2. (AMSTAR 2 Results) showing Quality Assessment of the review

Table 1. PICO for this review

Review Questions	Inclusion Criteria	Exclusion Criteria
Population	Dementia caregivers and caregivers' burden from caregiving roles (psychological distress; stress, anxiety and depression) both in formal and informal caregiving roles and > 18 years	< 18 years and not in dementia caregiving role
Intervention	Psychological or psychosocial	Non-Psychological/non-psychosocial
Comparator	Any comparator or no intervention	
Outcomes	Psychological/psychosocial benefits/improvements or wellbeing.	Other outcomes
Study Design		
Other	Published in peer-reviewed academic journals in English	

Table 2. Excluded Full-Text Reviewed and Reasons for excluding

Author(s), Year	Reasons for excluding
Afram et al. 2014	No intervention
Alvira et al. 2015	No intervention
Gérain et al. 2019	No intervention
Harrad et al. 2018	No intervention
Iavarone et al. 2014	No intervention
Tak et al. 2019	No intervention
Feast et al. 2016	No intervention
Davidson et al. 2014	No intervention

Egan et al. (2018) also addressed internet-based interventions designed to support and train dementia caregivers. Primary outcomes of interest included caregivers' mental wellbeing, their perceived burden/stress. The secondary outcomes of interest included caregivers' quality of life, quality of care, caregivers' knowledge about dementia, how they respond to challenging behaviours of dementia patients, their coping strategies, and self-efficacy [31]. In all there were over 900 participants in eight randomised controlled trials that met the inclusion criteria [31]. Findings to this research was that the content and structure of internet-based interventions, outcome measures, and the duration varied widely [31]. Additionally, the selection, performance, and

how biases were reported varied [31]. Outcomes of caregivers' burden were reported in three studies [31]. Another three studies reported knowledge skills, quality of life and how they react to challenging behaviours [31]. Caregivers' mental health outcomes were reported in six studies while two studies reported self-efficacy and changes in coping outcomes [31]. Although it is evident that the application of internet-based interventions offer improvement to dementia caregivers' mental well-being, there is diversity in the methodology across studies which prevented robust result outputs [31]. Therefore, a more consistent, concerted approach is required from all stakeholders in order to be able to realise the full potential of this approach [31].

Table 3. Data of Included Publications

No.	Author, Year and Country.	Article Title	Study design and Settings	Addressed Issues	Population and Participants	Problem Statements	Interventions	Assessed outcomes/measures	Remarks/Results
1	Boots, L. M. M.; Vugt, M. E. de; van Knippenberg, R. J. M.; Kempen, G. I. J. M.; Verhey, F. R. J., 2014, Netherlands.	A systematic review of Internet-based supportive interventions for caregivers of patients with dementia	Quantitative	Providing an overview of evidence for the effectiveness, feasibility, and quality of internet-based intervention for dementia caregivers	12 adults dementia informal caregivers	Problems of isolation of informal dementia caregivers preventing them from reaching out or getting the education/information and support that they need in order to enable them continue in their care roles and maintaining their well-being.	Internet-based intervention	Confidence, stress, self-efficacy, and depression	Improved Well-being of dementia caregivers
2	Cristancho-Lacroix, Victoria; Wrobel, Jérémy; Cantegreil-Kallen, Inge; Dub, Timothée; Rouquette, Alexandra; Rigaud, Anne-Sophie, 2015, France.	A web-based psychoeducational program for informal caregivers of patients with Alzheimer's disease: a pilot randomized controlled trial	Quantitative. (pilot Randomised controlled trial). Two groups and pre-post trainingQuantitative.	a pilot unblinded randomised controlled trial to evaluate efficacy and feasibility of web-based psychoeducational programme for informal dementia caregivers.	49 Adults, French-Speaking informal dementia caregivers. Experimental (n=25), Control (n=24).	Aimed to address the problem of caregivers who are isolated and therefore, not able to attend face-to-face educational programme or intervention.	3 Months Web-based internet intervention with a 15mins to 30 mins weekly session	Caregivers' beliefs about dementia, self-perceived stress, caregiving skills, help-seeking behaviours and social support/contact.	Self-efficacy, Knowledge and skills about dementia and caregiving skills.
3	Egan, Kieren J.; Pinto-Bruno, Ángel C.; Bighelli, Irene; Berg-Weger, Marla; van Straten, Annemieke; Albanese, Emiliano; Pot, Anne-Margriet, 2018, Netherlands.	Online Training and Support Programs Designed to Improve Mental Health and Reduce Burden Among Caregivers of People With Dementia: A Systematic Review	Quantitative.	Investigating the best way to train, educate and support informal caregivers.	Caregivers. >900 participants	An attempt to investigate scalable intervention to support caregivers.	Internet-based intervention for informal caregivers.	Caregiver perceived burden/stress and mental health, knowledge skills and quality of life.	No record of outcome of quality of care.
4	Guay, Cassiopée; Auger, Claudine; Demers, Louise; Mortenson, W. Ben; Miller, William C.; Gélinas-Bronsard, Dominique; Ahmed, Sara, 2017, Canada.	Components and Outcomes of Internet-Based Interventions for Caregivers of Older Adults: Systematic Review	Quantitative/RCT	Investigating the relationship between behaviour change techniques and outcomes of internet-based intervention.	Caregivers of older (50 and above) adults.	Dementia caregivers' challenges to access intervention to improve their well-being and quality of life.	Online-based/Web-based intervention	interactive social, professional and peer supported internet-based interventions	No record of exact component and behaviour change technique that is more effective in producing positive outcomes in caregivers.

No.	Author, Year and Country.	Article Title	Study design and Settings	Addressed Issues	Population and Participants	Problem Statements	Interventions	Assessed outcomes/measures	Remarks/Results
5	Hurley, Robyn V. C.; Patterson, Tom G.; Cooley, Sam J., 2014, UK.	Meditation-based interventions for family caregivers of people with dementia: a review of the empirical literature	Quantitative/RCT	Investigating the efficacy of meditation-based intervention for reduction of psychological distress and care burden in caregivers.	78 family caregivers of people with dementia.	Unknown if meditation-based intervention is effective in reducing depression among dementia caregivers	Meditation-Based practice using Mindfulness-Based Stress Reduction (MBSR) intervention	Significant reduction pre-to post-intervention. Low attrition rate; 92% completing trial and 2-month follow up.	Relatively moderate to high quality of design.
6	Jensen, Mette; Agbata, Ifeoma Nwando; Canavan, Michelle; McCarthy, Geraldine, 2015, Ireland.	Effectiveness of educational interventions for informal caregivers of individuals with dementia residing in the community: systematic review and meta-analysis of randomised controlled trials	Quantitative/RCT	Assessment of educational intervention for dementia caregivers in the community	764 (dementia caregivers) participants	Unclear whether educational intervention offers hope for caregiver burden, psychological distress such as depression, quality of life and well-being of dementia caregivers.	Educational programmes for dementia caregivers.	Study show a moderate on carer burden, a a small effect on depression	unclear whether there was any effect on QoL and transition to long stay care.
7	Stefanopoulou, Evgenia; Lewis, David; Taylor, Matthew; Broscombe, James; Larkin, Jan, 2019, UK	Digitally Delivered Psychological Interventions for Anxiety Disorders: a Comprehensive Review	Quantitative/RCT	The effectiveness of several digitally delivered psychological therapy was evaluated.	68 RCTs unknown participants due to unavailability of free fulltext	Unknown effects of digitally delivered psychological interventions.	Digitally psychological therapy such as CBT, Mindfulness.	Effective for social anxiety disorders	findings were less consistent and methodological approach varies.
8	Zhao, Yanan; Feng, Hui; Hu, Mingyue; Hu, Hengyu; Li, Hui; Ning, Hongting; Chen, Huijing; Liao, Lulu; Peng, Linlin, 2019, China.	Web-Based Interventions to Improve Mental Health in Home Caregivers of People With Dementia: Meta-Analysis	Quatitative/RCT	Examining the effects of internet-based interventions on the mental health outcomes of family dementia caregivers as well as exploring the components of the Web-based interventions that play significant role.	815 caregivers participated in 6 studies	Investigating the effect of Web-based interventions on mental health outcomes of caregivers. It is unknown what component play significant role in this intervention	Web-based intervention	effective in reducing anxiety and depression in dementia caregivers, also effective for anxiety in dementia caregivers.	relatively poor when applied to coping, pain, and stress.

Guay et al. (2017) studied outcomes of Internet-based interventions for caregivers of older adults in order to improve their quality of life and wellbeing [32]. An update for the most effective Internet-based interventions for caregivers of older adults was provided [32]. Caregivers who received this intervention were caregivers of people aged 50 years and older. Components of the intervention were multimedia use, interactive online activities and provision of support [32]. Behavioural change techniques

were also offered via this medium [32]. Outcomes of this intervention were mediators, psychological health and effects on stressors [32]. Twelve studies describing ten Internet-based interventions were screened from 2338 publications and seven of these interventions yielded statistically significant improvements in caregivers. Outcomes included reducing depression and or anxiety n=4. Interactive components used were online exercises as well homework (n=4). There were also questionnaires

(n=2) on health status. Five of the participants incorporated remote human support such as by peers or professionals [32]. Provision of support proved to be the most effective and most frequently used behaviour change technique [32]. Additionally, provision of social support (n=6) and combinations of instructions in order to guide. However, the study design did not inform what components or behaviour change technique was more effective in yielding positive outcomes in caregivers [32]. It was evident that the incorporation of social support with internet-based intervention and a professional to offer guidelines to change behaviour and social problems are effective in generating positive outcomes in caregivers, however, it is not clear what mechanisms are responsible for these outcomes. Therefore, further studies are required to investigate factors that affect the effectiveness of this intervention.

This randomised controlled trial show that MBSR intervention is effective for dementia caregivers [33]. Result shows significant reduction in pre-to post-intervention with low attrition rate observed with 92% of participants completing trial including a 2-month follow up [33].

In Jensen et al. (2015) there was a moderate effect on caregiver burden with a Standard Mean Difference (SMD = -0.52, 95% confidence interval (CI) -0.79 to -0.26; I(2) = 40%). A Meta-analysis of two studies showed small effects on depression (SMD = -0.37; 95% CI -0.65 to -0.09; I(2) = 0%) A zero effect was recorded on the number of transitions to long stay care with a (relative risk of 1.29; 95% CI 0.80 to 2.89) [34]. Effect on Quality of life (QoL) was not estimable [34]. The study concluded that educational programmes offer a moderate effect on caregiver burden and only a small effect on depression. It was, however, unclear whether there was any effect on QoL and transition to long stay care [34].

Internet-based cognitive behavioural therapies (iCBT) have been well researched to date, however, this study evaluated the effectiveness of other several digitally delivered psychological therapies such as cognitive behavioural therapy (CBT), including mindfulness, behavioural stress management and counselling [35]. Among these psychological disorders, social anxiety disorders (SAD) was the most Randomised controlled trials (RCTs) to be conducted [35]. The study included 68 RCTs and the effectiveness of iCBT for social anxiety disorders (SAD) was supported [35]. The level of therapist contact or expertise appear not to have much effect on treatment effectiveness [35]. Although some RCTs indicated significant improvement at post-treatment as well as follow up, findings were less consistent and methodological approach varied [35]. Therefore, additional large and methodologically rigorous trials are required in order to evaluate effectiveness of this approach for anxiety disorders [35].

In Zhao et al. (2019) Internet-based interventions on the mental health outcomes of family dementia caregivers was examined and the components of the Web-based interventions that play significant roles were explored [36]. Among the 815 caregivers who participated in six studies, four of the studies explored depression as an outcome where results showed that scores were reduced by an average of 0.23 (95% CI -0.38 to -0.07 ; p<.01) after Web-based interventions [36]. The average scores of two

caregivers who were experiencing anxiety symptoms dropped by 0.32 points (95% CI -0.50 to -0.14; p<.01) [36]. While this study shows that Web-based interventions were effective for anxiety in dementia caregivers, results were relatively poor when applied to coping, pain, and stress. Additionally, professional psychological support in educating caregivers can improve caregivers' mental health [36]. Although this intervention is effective at reducing anxiety and depression in caregivers, results were negative in some studies [36]. Therefore, further research is required for care burden and stress.

4. Discussion

The unprecedented crisis caused by the novel coronavirus 2019 (COVID-19), that brought about an outbreaks of a highly infectious virus [37], exposed people across all demographic groups all over the world to possible health hazards with the increase of the number of infected persons within a relatively short period of time [38,39,40]. Older people are highly vulnerable to the deadly virus [39,40], and therefore, this age population included but not limited to people with dementia but also their caregivers who are also within the age range and those with underlying health conditions are potentially at risk of being exposed to this disease [24,41]. Consequently, there have been lockdown across the world in the bid to fight against the spread of the COVID-19 disease. The disease is not without possible negative psychological impact [42,43].

People with dementia, due to the nature of their cognitive decline [44], would require the care and support of carers such as dementia caregivers in order to be able to follow healthcare and preventive measures such as wearing of the face masks and washing their hands with water and soap or hand sanitisers [24,40]. However, dementia caregivers who are of younger age group also pose the risk of infecting people with dementia whom they care for with the deadly virus [24,40]. Dementia caregivers who are isolated [8], can access meditation-based intervention [33,35], get information about dementia and dementia care, receive psychoeducation training [31,34], and socialise with other dementia caregivers via internet-based or web-based in order to enhance their mental well-being [36].

The effectiveness of the integration of Information and communication technologies (ICTs) in dementia care and caregivers' support has been evident in recent research [45,46,47,48,49,50], and this has been found to be significantly helpful in the unprecedented coronavirus 2019 (COVID-19) global pandemic [43,50]. However, future research into several ethical issues should be addressed.

5. Limitations

Majority of the studies identified involved informal/family caregivers. However, it would be interesting to find out how professional dementia caregivers compare to informal/family dementia caregivers. Most of the identified and selected studies are systematic reviews,

more randomised controlled trials (RCTs) would enhance the robustness of the outcomes. Although randomised controlled trials (RCTs) are of very high standards that offer prospective studies enabling us to measure the efficacy of novel approaches [51] and they offer some good experimental models [52], systematic reviews are the products of synthesised knowledge of several primary research. Systematic reviews enable us to understand some difficult aspects of research that enable us to focus on future research [25,26,53]. Additionally, systematic reviews enable us to know what is already available about a particular area or topic as well as giving us insights into the impact of new interventions [54,55]. Although there are some limitations to the efficacy of Internet-based or web-based interventions, these interventions are effective for a wider spectrum of care burden and psychopathologies such as stress, anxiety and depression.

6. Implications for Future Research

Findings show that the knowledge of dementia might help to mitigate the negative effects of stress, anxiety and depression in dementia caregivers [34,35,36]. It will be interesting to note that of all the dementia caregivers identified in the literature search there were no professional dementia caregivers identified which may indicate that professional dementia caregivers are not as exposed to the risk of dementia care burden as the informal/family caregivers. Consequently, it may be almost safe to state that the knowledge and skills acquired from training and re-training may serve as prophylaxis against dementia care burden. Additionally, it was evident that increased education and information about dementia and dementia care skills as well as social interaction among dementia caregivers offered positive outcomes [8,29,32]. Consequently, they were able to maintain their mental wellbeing. Furthermore, research show that among the dementia caregivers identified in the literature search, it is interesting to note that no single male dementia caregiver was identified which may call for another research into what the factor could be that is responsible for such outcome. Does that mean that dementia caregiving roles are only meant for female caregivers? This review poses questions about some inconsistencies of several interventions across wider cultures to investigate if similar results will be achieved. Therefore, further research requiring more participants is required in order to explore the effects of internet-based/web-based interventions on professional caregivers as this work mainly identified informal dementia caregivers.

7. Conclusion

It is interesting to note that there are some commonalities of comorbidities such as stress, anxiety and depression in dementia patients and dementia caregivers. Consequently, dementia patients and their caregivers might share some common therapeutic interventions, especially the psychological and psychosocial interventions. However, some cognitive behavioural therapy (CBT) approaches such as CBT contemporary approaches might be effective

in the treatment of both dementia patients and their caregivers. Furthermore, it is evident that dementia caregivers are mostly informal/family caregivers. This caregivers' group can be isolated from the mainstream society due to the round-the-clock nature of their caregiving roles making it difficult for them to attend the therapies they may need. Findings in this research revealed that isolated dementia caregivers can access effective psychological and psychosocial interventions as well as psychoeducation therapy via the internet-based/web-based interventions. Finally, during this time of the COVID-19 crisis, the internet-based or web-based interventions best serve this purpose. Although there are some limitations to the efficacy of these interventions, they are effective for a wider spectrum of care burden and psychopathologies such as stress, anxiety and depression.

Statement of Competing Interests

The authors have no competing interests.

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