Review Article

Care Recipient Multimorbidity and Health Impacts on Informal Caregivers: A Systematic Review

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Abstract

Background and Objectives: Caregiving outcomes have often been reported in terms of care recipients of single disease, rather than multiple health conditions. A systematic review was conducted to outline caregiving health outcomes and its association with care recipient multimorbidity for informal caregivers of older adults.

Research Design and Methods: A search strategy was applied in six databases and grey literature. Inclusion criteria were primary observational studies on informal caregiving for care recipients aged 60 years and above, in the English language. Informal caregivers were those not formally hired and multimorbidity referred to presence of at least two health conditions. From a total of 2,101 titles, 230 abstracts were screened, and 19 articles were included. Quality assessment was conducted with application of the Newcastle-Ottawa-Scale.

Results: Health-related and caregiving-related outcomes have been assessed for informal caregivers of older adults with multimorbidity. Caregiver subjective burden was most commonly evaluated and often reported to be low to moderate. In association with care recipient multimorbidity, caregiver burden, quality of life, and perceived difficulty in assisting the older adults were examined in 14 of the studies with mixed results. Studies were heterogeneous, with nonuniform definitions of informal caregivers and multimorbidity as well as measurement tools.

Discussion and Implications: This narrative review found that caring for older adults with multimorbidity impacts caregivers, although overall evidence is not conclusive. Despite caregiving-related outcomes being most commonly assessed among the caregivers, particularly subjective burden, findings suggest that it is worthwhile to examine other outcomes to enrich the evidence base.

Keywords: Analysis-Systematic Review, Caregiving, Informal, Chronic illness, Care recipient multimorbidity

Background and Objectives

A considerable proportion of older adults are multimorbid, whether in community or health facility settings, with prevalence estimates of reaching more than 50% among older adults (Xu, Mishra, & Jones, 2017). Multiple health conditions is a challenge as multidisciplinary care is needed, increasing the likelihood of fragmented care (Araujo de Carvalho et al., 2017). Assessing existing clinical guidelines, Buffel du Vaure and colleagues (2016) found that for a person with multimorbidity, numerous health and pharmacological recommendations would be advocated, which could result in poor adherence and unfavorable patient outcomes. Multimorbid older adults have been reported to face poor quality of care as services often
cater for younger age groups, and focused toward discrete illness episodes (Banerjee, 2015). Consequently, an older adult with multimorbidity faces simultaneous challenges of degenerative age-related changes, risk of multiple illnesses, and navigating an imposing health system, thus may not be able to address ensuing health needs without assistance.

Inevitably, the aging population raises issues of long-term care (Cubit & Meyer, 2011; Zhang, Guo, & Zheng, 2012). In Asian countries, informal caregiving by family members is often advocated by cultural and religious values (Sasat & Bowers, 2013; Zhang et al., 2012); furthermore, formal care services may not be fully developed (Sasat & Bowers, 2013). Nevertheless, in countries where formal care systems are available, such as in Eastern and Southern Europe, family ties is also a factor that promotes informal caregiving (Mair, Quiñones, & Pasha, 2016), and is an option that is fitting to enable older adults to stay within their own homes (Cubit & Meyer, 2011). In the United States, Wolff and colleagues (2017) found that majority of informal primary caregivers for disabled older adults in 2015 were spouses (48.9%) or children (36.1%); of the 5.2 million disabled older adults (weighted estimates), 33.3% required help with more than two daily activities (e.g., eating, dressing, bathing). For multimorbidity older adults, informal caregivers have a role as an alternative to formal care (Ho, Kulusi, & Im, 2017), and as partners in promoting improvements in managing health needs (Lehnert et al., 2011).

Subsequently, informal caregivers have been the purview of several reviews, with varying definitions such as providing unpaid assistance with daily activities of the care recipient (Roth, Fredman, & Haley, 2015), or unpaid individuals—often family members—who provide physical and emotional support (Bastawrous, 2013). Across studies, other caregiver characteristics, for example, type of relationship, type of tasks or care provided, and whether caregivers are living with the care recipient also differ (Roth et al., 2015). Dilworth-Anderson, Williams, and Cooper (1999) differentiated caregivers as “primary” (the most responsible for the care recipient), “secondary” (plays a complementary role with less decision-making responsibility), or “tertiary” (involved with specific tasks only); some have also characterized caregivers based on care duration (Bastawrous, 2013).

Specifically, caregivers of older adults with dementia or physical frailty, have been reported to face worse health outcomes (e.g., more depressive symptoms and experience of stress) compared to noncaregivers (Pinquart & Sorensen, 2003), particularly spousal caregivers (Pinquart & Sorensen, 2011). Care recipient factors, including care recipient physical disability, cognitive impairment, and behavior problems have impact upon the physical health of caregivers (Pinquart & Sorensen, 2007). Care recipient dementia in turn, impacts both psychological and physical health of caregivers (Pinquart & Sorensen, 2003). Nevertheless, mental or physical strain of caregiving is not universal (Grant & Graven, 2018; Roth et al., 2015). In addition, positive aspects of caregiving have also been highlighted (e.g., psychological satisfaction and a closer connection to the person cared for), suggesting that caregiving is simultaneously accompanied by adaptation skills (Roth et al., 2015).

Informal caregivers are an existing “workforce” within health systems where care for older adults are provided; evaluating available policies for informal caregivers in Europe, Courtin, Jemiai, and Mossialos (2014) found that supportive systems exist or are developing, hence these contributions of informal caregivers are increasingly recognized by policymakers. Nevertheless, as noted above, much of caregiving literature pertains to care recipients of specific diseases, rather than the consideration of the combination of health issues that may be present. To add to the evidence base, this review seeks to answer the question: How does multiple health conditions of older adults’ impact upon the health of their caregivers?

### Design and Methods

#### Search Strategy

This systematic review was conducted according to PRISMA guidelines (Liberati et al., 2009), and was registered with the International Prospective Register of Systematic Reviews (PROSPERO) on February 24, 2017; Registration number CRD42017057701. For the PRISMA checklist, see Supplementary Material A.

Five databases were searched for this review: PubMed, CINAHL, SOCINDEX, Psychology and Behavioral Sciences Collection, and Web of Science. The databases were last searched on April 10, 2017, except PubMed which was last searched on May 3, 2017. An additional database, the International Research Community of Multimorbidity (IRCMo) library of publications on multimorbidity, accessible online, was screened in April 2017 for relevant titles (IRCMo, 2017).

The search strategy for this review was developed with assistance from the university librarian, and comprised four concepts: “Caregivers”, “Multimorbidity”, “Older Adults”, and “Health Outcomes”. Based on these concepts, MESH terms and keywords were identified. To retrieve as many publications on multiple morbidities, the MESH term “comorbidity” was included as well as the keywords “comorbid*”, “multiple comorbid*”, “multiple morbid*”, “multiple chronic disease”, and “multiple chronic condition”. As the addition of the fourth concept, “Health Outcomes” yielded titles which were too narrow, it was not applied for the final search output. Further, no limitation was applied in the databases search such as time or language during the search process. The search strategy was applied in standardized steps for all databases with inclusion of “Title/Abstract” in PubMed, and “Title” in the other databases (see Supplementary Material B).
In addition, grey literature was also searched via Google Scholar on April 21, 2017 with application of the search terms “multimorbidity” and “caregiver”. The reference lists of included articles were also screened.

Eligibility Criteria
Inclusion criteria for informal caregivers were individuals not formally hired, with no exclusion criteria for type of caregiver (primary, secondary, or tertiary), caregiving duration, or sample size. Caregivers caring for a mixed group of care recipients, where findings were not specific to caregivers caring for care recipients with multimorbidity, were excluded. Inclusion criteria for care recipients were older adults above 60 years old with multimorbidity. The age of 60 was applied to define an older person, with reference to the definition advocated by the United Nations (UNFPA, 2012). Currently, there are varying definitions of multimorbidity, with the most common being “the presence of two chronic illnesses” (Calderón-Larrañaga et al., 2017). However, whether closely related illnesses are considered discrete conditions or multiple conditions is an on-going area of discussion, for example, angina and heart failure which are both heart-related disease (Calderón-Larrañaga et al., 2017). Currently, non-“disease” entities such as risk factors which have likelihood of resulting in disease, and symptoms which may be debilitating in daily life are considered for inclusion (Xu et al., 2017). In this review, a broad definition was attempted to include other morbidities, such as disability, sense-organ deficiencies, geriatric syndromes, and risk factors, which have been previously associated with chronic illness.

A distinction between “multimorbidity” and “comorbidity”, which have often been used interchangeably, has also been suggested by Almirall and Fortin (2013), where multimorbidity is applicable where no primary condition of interest in being studied, and comorbidity refers to additional morbidities to a primary condition that is of interest. Further, several tools have been applied to measure multimorbidity, however, there is no standardized measure in the older population (Calderón-Larrañaga et al., 2017). In this review, studies where the term “comorbidity” was used by authors were included if the number of illnesses or comorbidities were reported, or an established index measure was applied. In some of the included studies, where no index condition was identified, multimorbidity was constructed by the reviewers based on the health conditions included in each study and is described as “multimorbidity complex”.

Only primary, quantitative studies of observational design were included. Non-English articles were excluded in view of the reviewers’ language fluency. To identify caregiving outcomes for inclusion, the initial aim was to include outcomes relating to physical (e.g., development of physical illness), psychological, or mental health (e.g., development of psychiatric illness).

Data Collection
For identification of relevant articles, two reviewers screened all titles. All titles related to caregiving were included; when there was doubt about the possible relevance of an article, it would also be included. Each reviewer reviewed a portion of abstracts to decide on its relevance. Next, full texts were retrieved, and divided among the reviewers to shortlist articles for inclusion. Any discrepancies were resolved through discussion and consensus between at least three reviewers. Data extraction was performed using a standardized data extraction sheet, with any discrepancies resolved by discussion and consensus. Information relating to the following items were extracted: objectives of the study, study design, study setting, study population, sampling method, sample size, definition of multimorbidity, definition of informal caregivers, type of outcomes reported, measurement tools, and results of relevant outcomes. Clarifications were sought from authors via e-mail where necessary, however, no responses were obtained. Principal summary measures that were of interest were any prevalence estimates or difference in means of the caregiver outcomes, as well as any associations with care recipient multimorbidity such as odds ratio. Upon extraction of data, impacts specific to caregiving were noted; these were considered important to add to the synthesis of findings although they may not be clearly distinguished as “health” outcomes. These outcomes were categorized as caregiving-related outcomes and elaborated in the findings of this review. In addition, some personal characteristics of the caregivers are included in the findings of this review, as they were considered relevant to the discussion of the included outcomes.

Data Synthesis and Assessment of Quality
Synthesis of findings and assessment of study heterogeneity and risk of bias were narrative in nature, with discussions and consensus among the reviewers. Quality appraisal was done using the Newcastle-Ottawa Scale (NOS) which has been applied for observational studies, including cohort (Wells et al., 2014), and cross-sectional studies (Yunus, Hairi, & Choo, 2017). The reviewers applied arbitrary cutoff points to summarize the scores (see Supplementary Material C). For cross-sectional studies, the reviewers describe articles obtaining 1–3 stars as low, 4–6 as moderate, and 7–10 as good, in terms of the strength of the evidence. For cohort studies, scores of 1–3 stars are described as low, 4–6 as moderate, and 7–9 as good.

Results
A systematic search of six databases retrieved 1,654 titles. Google scholar search yielded 6,410 articles; the first 300 were screened following reviewers’ consensus with reference to Haddaway, Collins, Coughlin, and Kirk (2015). A total of seven headings in the IRCMo list of publications
were screened, amounting to a total of 384 titles. Following removal of duplicates, a final total of 2,102 titles were screened. During this first phase of screening, articles were first excluded when the subject matter was not related to caregivers. Next, articles which were not related to multiple morbidities were excluded. Consequently, 230 titles were selected for screening of abstracts, resulting in 50 titles shortlisted for full text. From these 50 full texts, the reviewers noted articles where multimorbidity of the care recipient could not be ascertained, for instance, information on care recipient history of illnesses were not part of the study, or age not fitting inclusion criteria; these articles were excluded. Subsequently, 17 articles were considered fitting of the review objectives. Screening the reference lists of the 17 articles, an additional 2 articles was noted to be relevant for this review. Thus, the total number of articles included in this systematic review is 19. The PRISMA flow chart is illustrated in Figure 1.

General Study Characteristics
From the 19 included articles, studies were most often cross-sectional (n = 14) and conducted in developing or developed countries; further details are presented in Table 1. These cross-sectional studies scored between 3–8 (low to good) stars with the NOS, whereas the cohort studies scored an average of 5 (moderate) stars. All studies were published after the year 2000, except Birkel and Jones (1989), which was published before 1990. Two pairs of studies were related to the same care recipient population, however reported separately in this review, as the study design and outcomes measured differed (Izawa, Hasegawa, Enoki, Iguch, & Kuzuya, 2010; Kuzuya et al., 2006; McCusker, Latimer, Cole, Ciampi, & Sewitch, 2007, 2009).

Population of Care Recipients With Multimorbidity
Among the 19 articles, two studies directly reflected multimorbidity in its title, Duggleby et al. (2016) where the population of older adults had “multiple chronic conditions”, and Giovannetti et al. (2012) where the term “multimorbidity” was applied. One study applied the term “multimorbidity” to describe the care recipients (Oldenkamp et al., 2016), while others applied the term “number of illnesses” or “comorbidities”. Multimorbidity was measured either as a list of diseases (n = 9 studies) or using an index measure which considers severity of the conditions (n = 8 studies), the most common being the Charlson Comorbidity Index (CCI); see Supplementary Material D.

In two studies, multimorbidity was a composite measure determined by the reviewers based on the diseases reported. First is the study by Wolff, Spillman, Freedman, and Kasper (2016), whose study participants had dementia and physical disability. Next, in the study by Sattar and colleagues (2007), study participants had an alcohol problem with cognitive deficiency. Although the main condition of the participants was problem drinking, they often had “complex medical and psychiatric problems”, thus this study was included. Birkel and Jones (1989) categorized participants as “Lucid” (having a physical illness and disability but without cognitive deficiency), and “Mixed” (all three morbidities were present). Both groups had more than two illnesses, thus were multimorbid. In two studies, not all care recipients were multimorbid, however, these studies were included as the number of comorbidities of the care recipients were assessed in association with caregivers’ health (Xie et al., 2016; Yang, Hao, George, & Wang, 2012).

Populations of Caregivers
All included studies defined family members as informal caregivers, including children-in-law; some studies also included friends (Sewitch, McCusker Dendukuri, & Yaffe, 2004; Duggleby et al., 2016; Giovannetti et al., 2012; McCusker et al., 2007; Oldenkamp et al., 2016). Three studies defined informal caregivers by care duration. Bradshaw, Goldberg, Schneider, and Harwood (2013) specified at least an hour a week, Xie et al. (2016) required more than 5 hr a week for more than 3 months, and Yang and colleagues (2012) applied the time frame of at least 6 months prior to enrolment into the study.

The sample sizes of caregivers ranged from 45 to 1,739. All recruited caregivers via convenience sampling, often through the older adults who were participating in another on-going study (Comans, Currin, Brauer, & Haines, 2011;
<table>
<thead>
<tr>
<th>First Author, Study design</th>
<th>Number of caregivers(^a)</th>
<th>Number of care recipients</th>
<th>Brief description of study and study population</th>
<th>Caregiver outcome</th>
<th>Assessment</th>
<th>Mean score (SD)/ Median (IQR)/Percentage (N); total score range</th>
<th>Quality assessment score with NOS tool(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anthony et al. (2017)</strong></td>
<td>56 English-speaking</td>
<td>Not reported</td>
<td>Secondary analysis from The Caring for My Elderly Relative Study (CMERS), 2007–2009, USA. Family members living together and caring for adults aged 60 years and above. Caregivers mostly female (93%); mean age 47.8 (SD 1.9) (English-speaking), 60 (SD 1.5) (Spanish-speaking).</td>
<td>Emotional drain</td>
<td>Emotional drain (English-speaking)</td>
<td>3.20 (2.48); 0–15</td>
<td>5 stars</td>
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<tr>
<td>Cross-sectional</td>
<td>76 Spanish-speaking</td>
<td></td>
<td></td>
<td>Emotional drain (Spanish-speaking)</td>
<td>Difficulty in assisting the older adult</td>
<td>3.61 (3.63); 0–15</td>
<td>5 stars</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Intensity of support (English-speaking)</td>
<td>18.11 (7.60); 0–60</td>
<td>6 stars</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Intensity of support (Spanish-speaking)</td>
<td>20.31 (9.75); 0–60</td>
<td>6 stars</td>
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<tr>
<td><strong>Dauphinot et al. (2016)</strong></td>
<td>1,300</td>
<td>1,300</td>
<td>Family members or other carers (44% spouses, 47% children) of community-dwelling older adults visiting the Clinical and Research Memory Centre for underlying cognitive complaint. Recruited between 2011–2014, France.</td>
<td>Subjective burden</td>
<td>Mini Zarit Burden Interview (Mini ZBI)</td>
<td>3.1 (2.0); 0–7</td>
<td>6 stars</td>
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<tr>
<td>Cross-sectional</td>
<td></td>
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<td></td>
<td>Zarit Burden Interview (ZBI)</td>
<td>21.27 (9.14); 0–88</td>
<td>5 stars</td>
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<td></td>
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<td></td>
<td>12-item Short Form Health Survey (SF-12) (Physical)</td>
<td>48.83 (9.49); 0–100</td>
<td>5 stars</td>
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<td></td>
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<td></td>
<td>SF-12 (Mental)</td>
<td>44.12 (10.42); 0–100</td>
<td>5 stars</td>
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<td></td>
<td>General Self-Efficacy Scale (GSES)</td>
<td>32.31 (4.33); 0–60</td>
<td>5 stars</td>
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</tbody>
</table>

\(^a\) Number of caregivers

\(^b\) Number of care recipients

\(^c\) Number of caregivers and care recipients include the same individuals, as well as other individuals not included in the study.

\(^d\) Number of caregivers and care recipients include the same individuals, as well as other individuals not included in the study.

\(^e\) Number of caregivers and care recipients include the same individuals, as well as other individuals not included in the study.

\(^f\) Number of caregivers and care recipients include the same individuals, as well as other individuals not included in the study.
<table>
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<tr>
<th>First Author, Study design</th>
<th>Number of caregivers&lt;sup&gt;a&lt;/sup&gt;</th>
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<th>Brief description of study and study population</th>
<th>Caregiver outcome</th>
<th>Assessment</th>
<th>Mean score (SD)/ Median (IQR)/Percentage (N); total score range</th>
<th>Quality assessment score with NOS tool&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oldenkamp et al. (2016)</td>
<td>518 (total recruited) 356 (baseline) 158 (follow-up)</td>
<td>2,019 (total members of the cohort)</td>
<td>Family (43% spouses, 57% children), or friends, unpaid and caring long-term for adults 65 years old and above. The older adults were part of a separate cohort study, recruited via 25 organizations in the Network Elderly Care Region North, Netherlands, which covers the northern provinces. 39% of the older adults were institutionalized. Caregivers mostly (68%), mean age 63.2 (SD 11.4).</td>
<td>Subjective burden</td>
<td>Carer-QOL (overall) Carer-QOL (Spouses) Carer-QOL (Adult-children)</td>
<td>3.9 (1.7); 0–10 4.4 (1.5) 3.6 (1.7)</td>
<td>5 stars</td>
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<tr>
<td>Wolff et al. (2016)</td>
<td>1,739 1,171</td>
<td></td>
<td>Cross-sectional secondary data analysis of publicly available data from 2 linked national surveys, the National Study of Caregiving (NSOC) and the 2011 National Health and Aging Trends Study (NHATS), United States of America (USA). Caregivers were family (26% spouses, 54% children) and other unpaid caregivers of community-dwelling older adults with disabilities who participated in the NHATS survey. Caregivers providing substantial help mostly female (69.3%), mean age 57.2 (SD 0.7). The care recipients were Americans aged 65 years and older, in community settings.</td>
<td>Objective burden</td>
<td>Hours per week by: Caregivers providing substantial help&lt;sup&gt;c&lt;/sup&gt; Caregivers providing some help Caregivers providing no help Difficulty in assisting the older adult Reporting: Emotional difficulty Physical difficulty Financial difficulty Reduced participation&lt;sup&gt;d&lt;/sup&gt; Work productivity loss</td>
<td>28.1 (1.5) 15.1 (1.3) 8.3 (0.7) 34.3% 21.6% 23.0% 35.3% 9.6%</td>
<td>6 stars</td>
</tr>
</tbody>
</table>

<sup>a</sup> Number of caregivers. 
<sup>b</sup> Quality assessment score with NOS tool. 
<sup>c</sup> Caregivers providing substantial help. 
<sup>d</sup> Reduced participation.
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Xie et al. (2016) Cross-sectional</td>
<td>450 (total recruited) 407</td>
<td>407</td>
<td>Family members (27% spouses, 49% children) providing home care &gt;5 hr a week for 3 months, for adults 60 years old and above, from six community health centres, China. Caregivers mostly female (57%), above 60 years old (56%), caring for at least 1 year (73%). Among the care recipients, 73.7% had ≥2 chronic illness.</td>
<td>Quality of life</td>
<td>36-item Short Form Health Survey (SF-36) overall mean score</td>
<td>70.06 (16.49); 0–100</td>
<td>6 stars</td>
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<tr>
<td>Kim et al. (2014) Cross-sectional</td>
<td>74 (total recruited) 60</td>
<td>60</td>
<td>Secondary analysis of existing data from a previous cross-sectional study conducted in 2003–2008, United States of America. Family members (67% spouses, 27% children) living together and primarily caring for adults aged 66–88 years old with underlying dementia, and attending two geriatric outpatient clinics. Caregivers mostly female (77%).</td>
<td>Subjective burden</td>
<td>ZBI</td>
<td>31.2 (15.7); 0–88</td>
<td>6 stars</td>
</tr>
<tr>
<td>Bradshaw et al. (2013) Cohort (3 months follow-up)</td>
<td>180</td>
<td>180</td>
<td>Defined as “someone who has regular contact with the patient participant for at least an hour a week”, caring for an adult ≥70 years, with an underlying mental health problem with an unplanned admission into the health centre. Majority caregivers above 60 years old (59%); children (50%), spouses (25%), 28% of the older adults were institutionalized.</td>
<td>Psychological distress</td>
<td>12-item General Health Questionnaire (GHQ-12)</td>
<td>13 (IQR 9.0–18.5); 0–36</td>
<td>5 stars</td>
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<td>Subjective burden</td>
<td>5 (IQR 2–8); 0–13</td>
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<td>Objective burden</td>
<td>2 (IQR 0–8)</td>
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<td>Quality of life</td>
<td>0.80 (IQR 0.62–1.0); 0–1</td>
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<td>First Author, Study design</td>
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<tr>
<td>Yang et al. (2012)*</td>
<td>1,500 (total identified) 1,290 (total recruited) 1,144</td>
<td>1,144</td>
<td>Family members (10% spouses, 57% children) who were primary family caregivers, having cared for an adult aged ≥60 years, with chronic illnesses, for at least 6 months. Caregivers mostly female (60%), mean age 44.3 ($SD$ 11.5), median care duration of 2.5 years. From 15 communities in 3 eastern cities, China. 44.2% (N = 506) of the care recipients have at least 2 chronic illnesses.</td>
<td>Subjective burden Quality of life</td>
<td>ZBI SF-36 (physical): Care recipient with two chronic diseases Care recipient with ≥3 chronic diseases SF-36 (mental): Care recipient with two chronic diseases Caring for older adults with ≥3 chronic diseases Antonovsky's Sense of Coherence scale (SOC)</td>
<td>27.3 (15.0); 0–88 72.52 (16.50); 0–100 68.93 (18.74); 0–100 64.22 (17.01); 0–100 60.04 (17.39); 0–100 56.1 (5.6); 13–91</td>
<td>6 stars</td>
</tr>
<tr>
<td>Comans et al. (2011)*</td>
<td>45</td>
<td>107</td>
<td>Secondary data analysis of a randomized controlled trial, Australia. Informal but otherwise not further specified carers of elderly aged ≥60 years with history of falls or functional decline.</td>
<td>Subjective burden</td>
<td>CSI</td>
<td>4.4 (SD 3.53); 0–13 22% (N = 10)</td>
<td>5 stars</td>
</tr>
<tr>
<td>Giovannetti et al. (2012)</td>
<td>308</td>
<td>904</td>
<td>Family (46% spouses, 44% children) or unpaid friends of older adults above 65 years old who reported receiving assistance with daily activities of health care tasks (HCT). The older adults were enrolled in a separate study, the Guided Care trial, USA. Caregivers mostly female (71%), caring for a mean of 6.4 years ($SD$ 0.4).</td>
<td>Depression Subjective burden Objective burden Difficulty assisting the older adult Self-efficacy Relation-ship quality Satisfaction with caregiving</td>
<td>Centre for Epidemiological Studies Depression scale (CESD) CSI Hours per week Oberst Difficulty Scale denoting: Low task difficulty Moderate task difficulty High task difficulty Chronic disease self-management scale</td>
<td>7.06 (SD 0.4); 0–60 7.25 (SD 0.34); 0–24 25.12 (1.57) 18.24% (N = 56) 13.03% (N = 40) 23.45% (N = 72) 8.49 (SD 0.12); 0–10 8.66 (SD 0.09); 1–10 (best) 8.40 (SD 0.11); 1–10 (best)</td>
<td>5 stars</td>
</tr>
<tr>
<td>First Author, Study design</td>
<td>Number of caregivers</td>
<td>Number of care recipients</td>
<td>Brief description of study and study population</td>
<td>Caregiver outcome</td>
<td>Assessment</td>
<td>Mean score (SD)/ Median (IQR)/Percentage (N); total score range</td>
<td>Quality assessment score with NOS tool</td>
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<tr>
<td>Izawa et al. (2010)*</td>
<td>893</td>
<td>1,875 (total members of the cohort); 1,502 (identified primary caregiver); 893</td>
<td>Secondary data analysis of baseline data from the Nagoya Longitudinal Study of the Frail Elderly cohort study initiated in 2003, Japan. Family (45% spouses, 32% children), or other carers of elderly ≥65 years, with underlying physical or mental disability. Caregivers mostly female (76%), above 65 years old (53%).</td>
<td>Depressive symptoms</td>
<td>15-item Geriatric Depression Scale (GDS-15) scores:</td>
<td>0–5 53.5% (N = 478) 6–10 33.9% (N = 303) ≥11 12.5% (N = 112)</td>
<td>5 stars</td>
</tr>
<tr>
<td>Townsend et al. (2010)</td>
<td>162</td>
<td>162 Family members (46% spouses) and friends caring for an adult ≥65 years, who were admitted for the first time at the Hospice of Western Reserve, USA. Caregivers mostly female, mean age 61.7 (SD 14.8), care duration 12–36 months.</td>
<td>Subjective burden</td>
<td>Cumulative strain consisting of psychological, physical, social, economic, spiritual strain.</td>
<td>1.70 (1.55); 0–5</td>
<td>5 stars</td>
<td></td>
</tr>
<tr>
<td>McCusker et al. (2009)*</td>
<td>154</td>
<td>325 (total recruited) 200 (identified caregiver)</td>
<td>Family members (32% spouses) or friends who provided the most assistance and were not paid for adults ≥65 years, cognitively intact, with underlying medical complaint with and without depression. Caregivers mostly female (74%), not coresiding (62%).</td>
<td>Objective burden (physical support)</td>
<td>Hours per week</td>
<td>Coresiding caregivers, care recipients with: Major depression 11.8 (IQR 3.0, 32.5) Minor depression 18.3 (IQR 14.0, 42.0),</td>
<td>6 stars</td>
</tr>
<tr>
<td>First Author, Study design</td>
<td>Number of caregivers</td>
<td>Number of care recipients</td>
<td>Brief description of study and study population</td>
<td>Caregiver outcome</td>
<td>Assessment</td>
<td>Mean score (SD)/ Median (IQR)/Percentage (N); total score range</td>
<td>Quality assessment score with NOS tool</td>
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<tr>
<td>McCusker et al. (2007)$^{a}$ Cohort (6 months follow-up)</td>
<td>97</td>
<td>163 (total recruited); 129 (survived after 6 months); 97</td>
<td>The older adults were recruited from the Emergency department of two hospitals and were participants in a separate study related to depression, Canada, 2005. Family members (35% spouses, 44% children) or friends who provided the most assistance and were not paid for adults ≥65 years, cognitively intact, with underlying medical complaint. The older adults were recruited from the Emergency department of two hospitals and were participants in a separate study related to depression, Canada, 2005. Caregivers mostly female (73%), mean age 61 (SD 14.8).</td>
<td>Nil depression</td>
<td>Objective burden (emotional support)</td>
<td>15.5 (IQR 7.0, 29.2)</td>
<td>5 stars</td>
</tr>
<tr>
<td>Sattar et al. (2007) Cross-sectional</td>
<td>306</td>
<td>349 (62 with an alcohol problem)</td>
<td>Family members (38% spouse, 50% children, 4% children-in-law, others) of older adults visiting a health center for geriatric assessment, who were involved at some level in patient's care, USA.</td>
<td>Quality of life SF-36 (physical) at baseline/6 months; care recipient with: Major depression</td>
<td></td>
<td>83.3 (22.7)/85.0 (19.6)</td>
<td>3 stars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Minor depression</td>
<td></td>
<td></td>
<td>88.5 (21.2)/86.5 (18.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nil depression</td>
<td></td>
<td></td>
<td>74.3 (27.7)/71.7 (28.2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Subjective burden Neuropsychiatric Inventory Caregiver Distress Scale (NPI-D); Family Burden Scale (FBS)</td>
<td></td>
<td></td>
<td>Not reported in terms of the multimorbidity complex.</td>
</tr>
<tr>
<td>First Author, Study design</td>
<td>Number of caregivers</td>
<td>Number of care recipients</td>
<td>Brief description of study and study population</td>
<td>Caregiver outcome</td>
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<tr>
<td>Kuzuya et al. (2006)</td>
<td>1,478</td>
<td>1,875 (total members of the cohort); 1,569; (identified caregiver) 1,874</td>
<td>Secondary data analysis of baseline data from the Nagoya Longitudinal Study of the Frail Elderly cohort study initiated in 2003, Japan. Family (39% spouses, 39% children) or other carers of older adults ≥65 years, Caregivers mostly female (80%), mean age 64.1 (SD 12.6).</td>
<td>Subjective burden</td>
<td>ZBI, care recipient has: History of fall</td>
<td>31.7 (17.6); 0–88</td>
<td>8 stars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No history of fall</td>
<td>27.6 (16.7); 0–88</td>
<td></td>
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<td></td>
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<td></td>
<td>GDS-15, caring for older adult with</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>History of fall</td>
<td>5.8 (3.9); 0–15</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No history of fall</td>
<td>5.4 (3.8); 0–15</td>
<td></td>
</tr>
<tr>
<td>Sewitch et al. (2004)</td>
<td>193</td>
<td>193</td>
<td>Secondary data analysis of baseline data of a randomized controlled trial, Canada, 2001. Family (41% spouses, 38% children) or friends of older adults ≥65 years with functional decline and depression. The older adults were recruited for the trial from four hospital Emergency departments. Caregivers mostly female (71%), coresiding (57%),</td>
<td>Objective burden</td>
<td>Hours per week Future, poor physical health</td>
<td>37.6 (13.1)</td>
<td>7 stars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SF-36, poor mental health</td>
<td>30.6% (N = 59), 53.4% (N = 102)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EQ-5D, poor quality of life</td>
<td>56.3% (N = 107)</td>
<td></td>
</tr>
<tr>
<td>Birkel and Jones (1989)</td>
<td>40</td>
<td>40</td>
<td>Adult-children (82% female) living together and caring for an older adult with physical illness or disability, with or without cognitive impairment. Volunteers who responded to public announcements, health centres, support groups, workplaces, or word-of-mouth.</td>
<td>Objective burden</td>
<td>Hours per week, caring for: Older adults with dementia</td>
<td>37.9</td>
<td>4 stars</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Older adults without dementia</td>
<td>29.7</td>
<td></td>
</tr>
</tbody>
</table>

aNumbers of caregivers included in analysis unless stated otherwise. bQuality assessment maximum 10 stars for cross-sectional studies or 9 stars for cohort studies. cCaregivers providing substantial help were more likely assisting care recipient with multimorbidity. dUnable to participate in ≥1 activities considered important in the past 1 month. eNot all care recipients have multimorbidity. fNot all care recipients have multimorbidity. gCare recipients were participants of the Nagoya Longitudinal Study for Frail Elderly (NLS-FE). hSame study population of care recipients as McCusker et al. (2007). iSame study population of care recipients as McCusker et al. (2009). jCare recipients were participants of the Nagoya Longitudinal Study for Frail Elderly (NLS-FE).
Types of Caregiving Outcomes

Diverse outcomes were reported for the caregivers of older adults with multimorbidity (see Table 1). Reported health-related outcomes were quality of life (QOL), psychological distress, and depression. These outcomes pertain to mental, psychological, or overall well-being; no outcome specific to physical health were noted. On the other hand, caregiving-related outcomes included subjective burden, objective burden, quality of relationship, satisfaction with caregiving, perceived effects of caregiving on social life, and difficulty in assisting the care recipient. Personal attributes that were included in the synthesis of findings of this review were caregiver coping and self-efficacy skills (see Supplementary Material E).

For health-related outcomes, caregiver QOL mean scores were noted to be lower compared to national population estimates, especially mental health (Duggleby et al., 2016; Xie et al., 2016). For caregiver depression, scores were low in the studies by Giovannetti et al. (2012) and Kuzuya et al. (2006), however, almost half of the caregivers in the study by Izawa and colleagues (2010) reported mild–moderate (33.9%) or severe depression (12.5%). Caregiver psychological distress was moderate (Bradshaw et al., 2013).

For caregiving-related outcomes, subjective burden was mild to moderate (Anthony, Geldhof, & Mendez-Luck, 2017; Bradshaw et al., 2013; Dauphinot et al., 2016; Duggleby et al., 2016; Giovannetti et al., 2012; Izawa et al., 2010; S. S. Kim et al., 2014; Kuzuya et al., 2006; Oldenkamp et al., 2016; Townsend et al., 2010; Yang et al., 2012). Objective burden showed a wide range of 2–6 hr per day (Bradshaw et al., 2013) to 2–38 hr per week (Birkel & Jones, 1989; McCusker et al., 2009; Sewitch et al., 2004). Quality of relationship and satisfaction with caregiving were high (Giovannetti et al., 2012), however difficulty assisting with tasks was reported as low in one study (Anthony et al., 2017), whereas more than half of the caregivers (35.48%) reported moderate to severe difficulty in another study (Giovannetti et al., 2012). In terms of personal attributes, coping skills and self-efficacy skills were moderate to high (Duggleby et al., 2016; Giovannetti et al., 2012; Yang et al., 2012). In terms of perceived effects of caregiving on social life, more than half caregivers reported this to be at least relatively important (Xie et al., 2016).

Association Between Care Recipient Multimorbidity and Caregiver Outcomes

Synthesis of findings show that multimorbidity of older adults has been studied more often in association with caregiving-related outcomes, namely subjective burden, objective burden, and difficulty assisting the older adult. QOL and psychological distress were two health-related outcomes evaluated in association with care recipient multimorbidity (see Supplementary Material F).

To begin with health-related outcomes, there was consensus that overall QOL (comprising both physical and mental health components) was not affected by care recipient multimorbidity (Sewitch et al., 2004; Xie et al., 2016; Yang et al., 2012), however, McCusker et al. (2007) reported an effect on the mental health component (β = −1.77; 95% confidence interval [CI] −3.86–0.31). All these studies measured QOL with the same tool, however, measurement of multimorbidity differed. On the other hand, Bradshaw and colleagues (2013) did not find an association between care recipient multimorbidity and caregivers’ psychological distress (p > .05).

Specific to caregiving, evaluation of subjective burden showed that type of conditions within the multimorbidity complex is an important consideration, in addition to contrasting findings between spousal and adult-children caregivers. Care recipient multimorbidity affects caregiver burden especially when dementia is one of the constituents. In the study by Dauphinot and colleagues (2016), the CCI complex with dementia remained significant when adjusted for behavioral problems and instrumental activities of daily living (β = 0.11, p < .05). The complex without dementia or “CCI-other comorbidities” was not reported in this model as it was nonsignificant in the earlier regression model (p > .05). Kim and colleagues (2014) noted an association with the cluster that included cognitive problems (β = 3.329, p < .05), adjusted for care recipient agitation behavior, despite the cluster not being significantly correlated to burden; the cluster without cognitive issues was not significant at analysis of variance (p > .05), thus was not included in the regression model. In the study by Oldenkamp and colleagues (2016), caregivers were categorized as spousal and adult-children caregivers. For spouses at baseline, multimorbidity of the care recipient affected mental health negatively (e.g., stress, fear, gloominess, depression, concern about the future), with odds ratio (OR) 1.305 (95% CI 1.035–1.645; p < .05). For adult-children, multimorbidity
of care recipients led to relationship problems (OR 1.166; 95% CI 1.005–1.353), and problems in combining daily activities (OR 1.266; 95% CI 1.064–1.583). There was no significant association noted at follow-up for either group, however, attrition rate was more than 50%. Despite several studies noting no association with burden, several caveats are of note in addition to differences of defining multimorbidity. Cognitive deficiency was not a constituent multimorbidity in the study by Bradshaw and colleagues (2013); in the study by Kuzuya and colleagues (2006), both dementia and depression were covariates rather than subcomponents of multimorbidity. Assessing care recipient dementia singularly, Kuzuya and colleagues (2006) noted it to be a significant predictor for subjective burden.

In terms of objective burden, the time required in providing physical care was not significantly influenced within the context of care recipient multimorbidity (McCuSer et al., 2009; Sewitch et al., 2004). However, McCusker and colleagues (2009) noted an association of spending equal or more than 14 hr per week on providing emotional support to their care recipients. In the study by Wolff and colleagues (2016) reported that self-efficacy is associated with lower odds of reporting difficulty with tasks (OR 0.64; 95% CI 0.54–0.77). This study also noted that caregiver self-efficacy was inversely related to caregiver depression (β = −0.99, 95% CI −1.53 to −0.46). These findings suggest that positive personality traits of the caregiver are favorable components in navigating caregiving responsibilities.

### Discussion

This review found that both health-related and caregiving-specific outcomes were assessed for informal caregivers caring for multimorbid older adults. In the literature, similar caregiving outcomes have been widely reported but often related to care recipients of specific conditions, such as dementia or physical disability (Chiao, Wu, & Hsiao, 2015; Pinquart & Sorensen, 2003). Despite the heterogeneity between studies, several points are notable for discussion.

First, the constituents of multimorbidity are an important consideration when caregiving outcomes are assessed. Synthesis of findings suggests that multimorbidity comprising of cognition-related problems can lead to caregiver burden. In fact, dementia caregiving has been persistently reported to be associated with higher levels of burden (Bastawrous, Gignac, Kapral, & Cameron, 2015; Chiao et al., 2015). Utilizing data from national surveys in Japan, Goren, Montgomery, Kahle-Wrobleski, Nakamura, and Ueda (2016) noted that dementia caregivers experienced greater burden, poorer mental health and lower QOL.

Recently, Dassel, Carr, and Vitaliano (2017) reported that spousal caregivers of adults with dementia are at risk of developing cognitive deficits themselves, compared to non-caregivers. In addition, Bradshaw and colleagues (2013) reported that the strongest predictors for caregiver burden in their study were care recipients’ behavioral disturbances and psychiatric symptoms. For adult-children caregivers, Bastawrous and colleagues (2015) noted that parental behavioral problems and psychological distress was associated with lower QOL. Much earlier, Chappell and Reid (2002) had compared dementia to nondementia caregivers and found that care recipient behavioral problems led to greater reported burden.

Second, effects on spousal and adult-children caregivers might differ where impact of care recipient multimorbidity is of interest. However, only one study evaluated effects on spousal and children caregivers separately (Oldenkamp et al., 2016), although caregiving has been reported to affect spouses and children differently. Spouses often provide more care, have less participation in other activities, and possibly have illnesses or disabilities (Pinquart & Sorensen, 2011).
The findings of Oldenkamp and colleagues (2016) thus concur with findings that spouses experience more negative effects in terms of psychological well-being (Dassell et al., 2017; Pinquart & Sorensen, 2011). In contrast, adult-child caregivers face the challenge of balancing multiple roles (child, spouse, parent) and are influenced by quality of the parent–child relationship (Bastawrous et al., 2015). A recent cohort study involving middle-aged adults caring for their parents with disability found that increasing parental disability decreased relationship quality between the parent and child (Kim et al., 2017).

Third, measurement of objective burden alone may not provide a clear picture of the caring requirements of an older person with multiple health conditions. Synthesis of findings suggests that objective burden was related to physical health problems and scheduling difficulties in adult-child caregivers in one study (Oldenkamp et al., 2016), whereas no significant association was noted in the other (Yang et al., 2012). Similar findings were noted by Fekete, Tough, Siegrist, and Brinkhof (2017) in their study of caregivers of adults with spinal cord injury, where objective burden was not found to be associated with well-being. In contrast, Bastawrous and colleagues (2015) noted that objective burden can lead to subjective burden, stress and health deterioration for adult-children caregivers. Nevertheless, comparing spousal to children and children-in-law caregivers, Pinquart and Sorensen (2011) noted that despite differences in objective burden, there was less difference in terms of number of tasks the caregiver groups assisted with. It may be that objective burden alone may not depict the extent of caregiving adequately as despite time limitations, equal number of tasks can be performed.

Consequently, having an idea of what types of tasks required assisting with would be valuable information. A relatively unexplored area in assessing impact of care recipient multimorbidity was perceived caregiver difficulty in assisting the older care recipient, not only in terms of activities of daily living but also health care-specific tasks. Multimorbid older adults have been identified as a population with complex medical needs. Ruiz, Bottle, Long, and Aylin (2015) analyzed more than 2 million hospital admissions, and results suggested that when heart failure, cerebrovascular accident, diabetes, hypertension and myocardial infarction were constituents of multimorbidity, disease burden were the highest, and patient outcomes the lowest. Specifically focusing on caregivers of heart failure patients, Clark and colleagues (2008) found that in addition to “visible” tasks such as medication management and IADLs, “invisible” tasks such as monitoring for symptom deterioration were also daily routine. Imagining the situation where the care recipient has multiple conditions, it is plausible that not only will care needs be higher, but also more complex. Wolff and colleagues (2016) noted that caregivers who provided substantial help—whom were also more likely to be caring for a multimorbid adult—were more likely to use supportive services such as respite care, compared to caregivers who provide less help ($p < .001$). Assessing difficulty of tasks may uncover needs in terms of additional knowledge or support to assist with caregiving.

Fourth, in terms of impact on caregivers’ health, caregiver characteristics are also notable in the assessment of effects. Where no association was found between care recipient multimorbidity and caregiver QOL, caregiver characteristics were more important predictors of QOL, such as the caregivers’ own chronic illness (Xie et al., 2016; Yang et al., 2012). In the study by Xie and colleagues (2016), a quarter of the caregivers had one chronic illness, and approximately 9.6% reported two or more illnesses. In contrast, 63.9% of caregivers in the study by Yang and colleagues (2012) reported presence of at least one chronic illness. This finding echoed the review by Lim and Zebrack (2004), that caregivers’ characteristics, including health problems and physical disability, affect their QOL. Wong, Lam, Chan, and Chan (2012) found a similar trend in their study of 276 caregivers of mentally ill adults in Hong Kong, where caregivers’ chronic illness impacted their QOL.

These caregiver characteristics also include personality attributes. Summarizing the positive aspects of caregiving for care recipients with dementia, Yu, Cheng, and Wang (2018) posited that self-efficacy and personal accomplishment are produced through effective strategies of coping with challenges of caregiving. As the caregiving experience has also been recognized as potentially rewarding, caregivers may not be highly strained unless there is no perceived positive aspect in their situation (Pinquart & Sorensen, 2003). Despite the numerous factors considered, caregiver competencies in handling challenging situations were not included in all studies.

In summary, impacts of caregiving have often been reported for caregivers of care recipients with single disease; anticipating that these outcomes may be amplified when a care recipient has multiple conditions is plausible. However, Lim and Zebrack (2004) posited that time may be a factor to be considered, such that chronic illness results in chronic strain that builds up over time. Thus, findings may have also been influenced by time at the assessment of the outcomes or follow-up time to observe effects. Despite presence of care recipients’ comorbidities in other studies related to caregiving, there is focus on the effect of the specific disease of interest such as dementia or disability (Chappell & Reid, 2002; Pinquart & Sorensen, 2003). In the context of multimorbidity, the interest is the effect that the combined conditions of the care recipients have on caregiving. Consequently, the current varying definitions of multimorbidity are a key issue that requires addressing to promote better interpretation of research findings (Almirall & Fortin, 2013; Xu et al., 2017).

Limitations

A universal limitation in terms of methodological issues noted across studies is that most often informal caregivers...
were recruited via convenience sampling. This had the most effect on the NOS assessments. From a pragmatic viewpoint, it might not be possible to obtain a sampling frame for informal caregivers in the population. Further, all outcome measures were obtained via self-report, which is an ingrained characteristic of many studies evaluating caregiver health outcomes. For the cohort studies, caregivers of multimorbid older adults were not compared to caregivers of older adults without multimorbidity, thus there was no nonexposed cohort. This impacts upon the practical significance of findings, as no definitive comparison can be made between these groups of caregivers. Also, the aims of the studies were to examine changes of the outcomes over time, thus the exposure was known to be present at baseline assessment. One study rated low on the NOS tool assessment as it only compared outcomes between groups; most studies scored moderate. These studies were also heterogeneous in terms of included variables in multivariate analysis. As caregiving research involves care recipient as well as caregiver factors, adjustment for different factors in one study to another adds to the diversity of findings. Further, included studies measured multimorbidity either as quantity of illnesses which may differ from one study to the other, and not all incorporated assessment of severity; nonuniform definitions make direct comparison of results challenging. Most of the studies were also cross-sectional, posing limitations in interpretation of cause and effect between care recipient multimorbidity and caregiving effects.

There are several limitations of this review. It is not an exhaustive discussion of caregiving outcomes for individuals caring for older adults with multimorbidity with the application of its inclusion and exclusion criteria. For example, publications not applying the term “multimorbidity” or its variants may not have been retrieved, as well as articles with titles comprising single diseases. The exclusion of non-English language articles limits the scope of the findings, in addition to the narrative results in comparison to if meta-analysis was possible. Considerable heterogeneity between the studies impact significantly upon the potential applicability of findings. Also, the included studies were mostly conducted in developed settings; there may be gaps from the perspective of developing and under-developed nations which is not covered by this review. Nevertheless, its strengths lie in a subject matter that has not been thoroughly explored previously in discussions of older adults’ with multimorbidity, a broader scope of defining multimorbidity, and the thorough search process, data extraction and assessment of quality of the articles.

Implications
Although this review had the initial aim of focusing on health outcomes, it was noted that caregiving-related outcomes were more often reported and thus were included. In conclusion, the evidence pertaining to caregiving for older adults with multimorbidity is nonconclusive at this present time. There is no standardized definition for both the concepts of informal caregiving and multimorbidity across studies; depending on the constituents of multimorbidity of the older adult, and with consideration of severity of conditions, impacts on different caregiver groups likely differ. With this diversity among populations, translation of the findings into clinical policy or practice is limited, as generalization of the findings would be disproportionate.

Despite the limitations and small number of articles, several points are of note. Impacts reported were often related to caregiving-specific outcomes, thus hinting that further research related to specific aspects of caregivers’ health, such as association with physical or mental illnesses, would contribute to the field. Next, despite subjective burden being the most common outcome assessed, simultaneously including the assessment of caregivers’ coping and management skills in tackling the challenges of their role is worthwhile as the assessment of burden often pertains to difficulties encountered. Assessment of positive attributes of the caregivers could depict a more balanced view of the caregiving experience, even if other caregiving outcomes are of interest. Assessment of which tasks are perceived as challenging for caregivers can shed light on which interventions to focus on, especially when the care recipient requires assistance with multiple daily tasks. Moreover, considering the contrasting definitions of multimorbidity, a standardized approach to defining the concept is vital. In terms of study design and setting, cohort studies and representation of low- to middle-income countries would undoubtedly add value in terms of methodology and potential application of evidence.

Although the work of health personnel, who are trained toward competency and earn a salary for their work done, are prominent in the care of older adults, the “work” of informal caregivers—who are at times possibly selected by default, such as spouses or coresiding children—are also important. In the current pursuit of tailoring care for older adults, recognizing the impacts of caregiving may help address the needs of not only the persons that require ongoing care, but also the concerns of the caregivers who may require support.

Supplementary Data
Supplementary data are available at The Gerontologist online.

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Conflict of Interest
None reported.

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