



## Review

# Urban–rural comparisons of outcomes for informal carers of elderly people in the community: A systematic review

Samantha J. McKenzie<sup>a</sup>, Deirdre McLaughlin<sup>a,\*</sup>, Annette J. Dobson<sup>a</sup>, Julie E. Byles<sup>b</sup>

<sup>a</sup> The University of Queensland, School of Population Health, Herston Road, Herston, Queensland 4006, Australia

<sup>b</sup> The University of Newcastle, Research Centre for Gender, Health and Ageing, Callaghan, New South Wales 2308, Australia

## ARTICLE INFO

## Article history:

Received 1 June 2010

Received in revised form 2 June 2010

Accepted 2 June 2010

## Keywords:

Caring

Carer burden

Elderly

Geographic location

Informal care

Urban–rural difference

## ABSTRACT

As the age of the general population increases, the number of elderly people who need care is increasing. It has been suggested that rural carers may be disadvantaged compared to urban carers, but it is not clear what affect geographic location has on carers. This paper presents a systematic review of the literature on urban–rural comparisons on various outcomes for informal carers who provide care for elderly people in the community. Of 150 articles that were reviewed, eight articles were included with three themes in the outcomes for carers: service use, health promotion behaviors and psychological health (such as carer stress, burden or depressive symptoms). Overall, there were few consistent or statistically significant differences between urban and rural carers. Many of the differences observed were explained by other factors, such as carer or care recipient characteristics. The literature search was limited to papers in the English language, involving quantitative methods and published in peer-reviewed journals. There were not enough studies found to examine other outcomes or to pool data across studies. There is too little evidence comparing urban and rural carers to inform clinicians and policy makers. More good-quality research is urgently needed.

© 2010 Elsevier Ireland Ltd. All rights reserved.

## Contents

1. Introduction.....	140
2. Method.....	140
2.1. Information sources and search.....	140
2.2. Article selection and eligibility.....	140
3. Results.....	140
3.1. Article selection and characteristics of the articles included.....	140
3.2. Service use outcome.....	140
3.3. Health promotion behaviors outcome.....	140
3.4. Psychological health outcome.....	142
3.5. Summary of results for carer outcomes.....	142
4. Discussion.....	142
5. Conclusion.....	143
Contributors.....	143
Competing interests.....	143
Ethical adherence.....	143
Provenance and peer review.....	143
References.....	143

\* Corresponding author. Tel.: +61 7 336 55355; fax: +61 7 336 55540.

E-mail addresses: [s.mckenzie5@uq.edu.au](mailto:s.mckenzie5@uq.edu.au) (S.J. McKenzie), [deirdre.mclaughlin@uq.edu.au](mailto:deirdre.mclaughlin@uq.edu.au) (D. McLaughlin), [a.dobson@sph.uq.edu.au](mailto:a.dobson@sph.uq.edu.au) (A.J. Dobson), [Julie.Byles@newcastle.edu.au](mailto:Julie.Byles@newcastle.edu.au) (J.E. Byles).

## 1. Introduction

The shift away from institutional care has meant that informal carers now provide the majority of care for sick, disabled or elderly people in the community [1]. As the age of the general population increases, the number of elderly who need care is increasing. Carers, who are typically women, often experience burden and strain in their caring roles [2], and they may also have poorer mental health, as measured by depression, stress and subjective well-being, than noncarers [3,4].

Carers in urban and rural locations may experience different stressors in their caring roles [5]. It has been suggested that rural carers may be disadvantaged because they may be further from services than urban carers or services may be lacking entirely from their area [6,7]. However, the results of articles investigating urban–rural differences have been mixed: some have indicated that rural carers fair better than urban carers [8], others that there is no urban–rural difference [9] or that urban carers fair better than rural carers [10].

Therefore, it is not clear what affect geographic location has on carers. This paper presents a systematic review of the literature on urban–rural comparisons of various outcomes for informal carers who provide care for elderly care recipients.

## 2. Method

### 2.1. Information sources and search

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to perform the systematic review and prepare this review [11,12]. A review protocol for search and inclusion criteria was determined in advance and its completion was documented.

Articles were identified by searching PsycInfo, Sociological Abstracts, Medline, Cinahl and Embase databases from 13 to 23 April 2010. There was no publication date restriction. Lists of references from retained articles were screened for additional material. The search strategy was developed by SM and DM and was implemented by SM. We used the following search terms for all databases: (caregiver or carer), (elderly or aged), and (rural and urban). Where possible, the search was expanded to include subject headings and keywords particular to each database.

### 2.2. Article selection and eligibility

Two reviewers, SM and DM, independently screened all articles returned from database searches. All articles were screened by title and abstract, and if necessary, by full text. Reviewers then conferred, and there was a 100% inter-reviewer agreement.

Eligible articles involved urban–rural comparisons of outcomes for informal carers of elderly persons (aged 60 years or older) in developed countries. Other inclusion criteria were: original research articles that used quantitative analyses, written in the English language and published in peer-reviewed journals. The World Bank's classification was used to determine developed country status [13]. There was no age restriction for the carers, and they did not have to be living with the person for whom they cared. Articles that involved institutionalized care recipients or only formal/paid care were excluded. Qualitative analyses and grey literature were excluded.

The information extracted from each retained study was care recipient age, carer age, carer outcome, and results in relation to the carer outcome. Extraction was completed by SM and confirmed by DM and AD. If necessary, authors were contacted for further clarification.

## 3. Results

### 3.1. Article selection and characteristics of the articles included

The searches identified 259 articles for review. After removing duplicates, 150 articles remained. Of these, 77 were removed after reviewing the abstracts because they clearly did not meet the inclusion criteria. A further 64 articles were removed after further inspection of the full text, for reasons such as no urban–rural comparison in the same country (31), no carer outcomes (16), wrong ages (11), qualitative articles (5) and a further paper [14] was removed from further consideration because of its disparate outcome (reunion participation). Exclusion of these papers left nine papers for consideration in the review.

Authors were contacted for clarification on the age of the care recipients in two articles [15,16]. Care recipient ages were found to be below the lower limit of 60 years for inclusion in the review in Tommis et al.'s [15] article; therefore, this paper was excluded. According to Lee, care recipient ages were not recorded in her study [16]. However, since the carers had a mean age of 72 years and they were caring for their spouses, it is likely that the recipients' ages were higher than the lower limit of 60 years and this article was included in the review.

Therefore, eight articles were considered eligible for inclusion. No new relevant articles were identified after inspection of the reference lists of the eight included articles.

There were three themes in the outcomes for carers: service use, health promotion behaviors and psychological health (such as carer stress, burden or depressive symptoms), and these, along with the carer and care recipient age, design and setting, are presented in Table 1. Study results and risk of bias within articles are discussed by outcome theme in Sections 3.2, 3.3 and 3.4.

### 3.2. Service use outcome

Two articles report service use as the outcome, such as access to medical health services and use of health and community services [17,18]. Lucke et al. [17] sampled women who identified themselves as carers from the Australian Longitudinal Study on Women's Health and who may or may not have used community services, whereas Kosloski et al. [18] sampled only from those people participating in the Alzheimer's Disease Demonstration Grants to States program and who had used respite care through the program.

Although Lucke et al. [17] did not control for care recipient characteristics, there were few urban–rural differences in service use. Specifically, they found no differences between urban and rural carers' reported use of medical or allied health services and few differences in access to health and community services. On the other hand, Kosloski et al. [18] found that urban carers had higher use of services than rural carers, and the difference was attributable to the carers' attitudes and beliefs and the care recipients' evaluations of service delivery, not income or geographic location.

### 3.3. Health promotion behaviors outcome

Lee [16] and Bédard et al. [9] investigated health promotion behaviors using the Health Promoting Lifestyle Profile. Both articles involved convenience sampling: Bédard et al. [9] included carers of elderly people with cognitive impairment, while Lee [16] included women who cared for their spouses.

There were no significant differences in demographic characteristics, length of time caring and amount of free time for self-care, between urban and rural carers in Lee's [16] study, and these char-

**Table 1**  
Study characteristics of included articles.

Study reference		N	Care recipient age M(SD) <sup>a</sup>	Carer age M(SD)	Design and setting	Outcome	Results
Kosloski et al. [18]	Urban	167	Overall 79(na)	Overall 66(na)	315 carers of Alzheimer's patients from 6 US states and Washington, D.C.	<i>Service use:</i> Average monthly respite use (in hours)	Urban used more respite than rural carers, but difference was explained by carers' beliefs
Lucke et al. [17]	Rural	148	Overall 79(na)	Overall 66(na)	282 female carers who were caring for someone who may have used services in Australia	<i>Service use:</i> Access to medical/allied health services and information, availability, use, ease of access and quality of health and community services	Any overall effect of urban–rural location was weak
	Urban	169	Overall 81.1(9.7)	Overall 78.0(1.5)			
Lee [16]	Rural	113	Overall 81.1(9.7)	Overall 78.0(1.5)	72 female carers of their spouses in a US southern state	<i>Health promotion:</i> Health promotion behaviors	No urban–rural difference
	Urban	39	na <sup>a</sup>	72.3(7.8)			
Bédard et al. [9]	Rural	33	na <sup>b</sup>	70.4 (6.8)	37 carers of recipients with cognitive impairment in Northern Ontario, Canada	<i>Health promotion:</i> Health promotion behaviors <i>Psychological health:</i> Role and personal burden	No urban–rural difference
	Urban	17	78.24(10.2)	59.6(16.3)			
Kim et al. [19]	Rural	20	78.5(7.6)	54.7(16.6)	484 cohabitating carers in Kwangju, South Korea	<i>Psychological health:</i> Carer burden	Urban–rural difference in burden was present only for carers who provide care for someone with cognitive impairment
	Urban	185	Overall 72.5(6.3)	Overall 62.0(14.6)			
Dwyer and Miller [20]	Rural	299	Overall 72.5(6.3)	Overall 62.0(14.6)	1388 Medicare elderly respondents and their primary carers in US	<i>Psychological health:</i> Carer stress and burden	No rural–small city–urban difference
	Urban	569	77.9(8.2)	61.4(15.2)			
Rozario et al. [8]	Small city	536	77.3(8.0)	62.2(14.9)	521 US Midwestern African American women carers	<i>Psychological health:</i> Depressive symptoms and perceived stress	Rural carers reported lower depressive symptoms than urban carers, but no difference in perceived stress
	Rural	283	76.6(7.9)	62.3(14.9)			
Bieñ et al. [10]	Urban	265	65+	Overall 53.8(15.1)	253 carers in urban Bialystok and rural Sokolka of Poland	<i>Psychological health:</i> Positive and negative impact of caring	Rural carers were more negatively affected by caring than urban carers
	Rural	256	65+	Overall 53.8(15.1)			
	Urban	127	75+	57(na)			
	Rural	126	75+	54(na)			

na: not available.

<sup>a</sup> Minimum age values are provided when mean and standard deviations were not available.

<sup>b</sup> Care recipient ages were not recorded. However, since the carers had a mean age of 72 years and they were caring for their spouses, it is likely that the recipient ages were similar. Therefore, the article remained in the systematic review.

acteristics were not controlled for in the analysis. Lee [16] found no significant differences between urban and rural carers' health promotion behaviors on the full scale or the six subscales (health responsibility, physical activity, nutrition, spiritual growth, interpersonal relationships and stress management).

In Bédard et al. [9], there were differences in care recipient behavior problems, amount of informal help received and other carer and care recipient characteristics. However, these factors were not controlled for in the analyses. The authors found no significant difference between urban and rural carers' health promotion behaviors for the full scale. The only differences were on two of the 27 individual scale items: rural carers reported that they sought a second opinion less often and engaged in leisure/physical activities more often than urban carers.

### 3.4. Psychological health outcome

Six articles investigated psychological health outcomes, including carer burden, stress or depressive symptoms, positive and negative impact and mental health [8–10,19,20]. Bédard et al. [9] and Kim et al. [19] measured carer burden using the Zarit Burden Interview. Bédard et al. [9] did not control for carer and care recipient characteristics, and they found no significant urban–rural differences in role or personal burden.

Kim et al. [19] investigated carers and their cohabitating care recipients in South Korea. They found that urban residence was significantly associated with higher carer burden than rural residence, even after adjustment for carer and care recipient characteristics. However, when the carers were separated into three groups by care recipient impairments (cognitive, any functional, no functional impairment) carer burden was higher for carers living in the urban setting only if they provided care for someone with cognitive impairment.

Dwyer and Miller [20] investigated differences in burden and stress between rural, small city and urban areas of the United States. There were significant differences in carer and care recipient characteristics and informal and formal networks across the three areas. For instance, rural carers had significantly worse perceived health and significantly lower income than urban or small city carers. Urban carers were more likely to experience a negative employment effect due to caring than rural or small city carers. These characteristics were not controlled for, and the differences in stress or burden were not statistically significant.

Rozario et al. [8] investigated depressive symptoms and perceived stress in African American women carers. Adjusting for carer and care recipient characteristics, rural carers reported significantly lower depressive symptoms than urban carers, but no difference in perceived stress.

Positive and negative impact of caring were investigated in Bień et al.'s [10] study on carers in Poland. Rural carers reported greater negative impact of caring than urban carers while urban carers reported greater positive impact of caring. However, once carer characteristics and care-recipient disability level were controlled for, geographic location had no significant effect on the positive impact of caring. The effect of rural carers reporting greater negative impact of caring still remained statistically significant. Therefore, rural carers were more negatively affected by caring, even when controlling for differences in carer characteristics and care recipient level of disability.

### 3.5. Summary of results for carer outcomes

In summary, there were few differences between urban and rural carers on most of the outcomes reported in the published articles. In one study, rural carers fared slightly better in regard to service use [17]. In a second study, the use of respite care was

accounted for by carer beliefs and attitudes, not income or geographic location [18]. There was no effect of geographic location on carers' health promotion behaviors overall [9,16], and the weak effect on two individual components was not consistent with rural carers seeking a second opinion more often, but also enjoying leisure activities more often than urban carers [9].

While Bédard et al. [9] found no urban–rural differences in role or personal burden, urban–rural differences were reported in Kim et al. [19]. However, this effect was present only for those carers who cared for someone with cognitive impairment. There were no rural–small city–urban differences in perceived stress or burden [20]. Similarly, Rozario et al. [8] found no urban–rural differences in perceived stress, but rural carers did have lower depressive symptoms than urban carers. Rural carers reported more negative effect of caring.

## 4. Discussion

Overall, there were few statistically significant differences between urban and rural carers of elderly people in the community, and those differences that were reported were weak and directions were inconsistent. Some of the observed differences were explained by other factors, such as carer or care recipient characteristics.

The current review is the only known systematic review investigating urban–rural differences in outcomes for carers who provide care for elderly people in the community. However, despite the need for care of increasing numbers of older people, the number of articles available for review was limited. Furthermore, the articles included in the review had varied outcomes and methods for statistical analysis, limiting the ability to draw overall conclusions. For instance, while several of the articles accounted for carer and care recipient characteristics that are known to affect carer outcomes [21], other articles only conducted analyses without adjustment for such confounding variables [9]. The extent to which articles included adjustment for confounders or effect modifiers could have caused bias in the results of those articles. The articles were also conducted across a variety of countries and cultural and health care settings, further adding to the heterogeneity of the results. The meaning of caring, formal and informal support for carers and the access to services is likely to vary across these different settings. The definition of rural and the extent of difference between urban and rural areas are also likely to differ from study to study and setting to setting.

The articles were also limited in terms of their sample size, restricting the power to identify significant differences should they exist. Likewise, few articles were sufficiently large to allow for subgroup analyses, and urban–rural differences may be more significant for carers with certain characteristics. There may be differences in the effect of urban or rural setting on outcomes for carers according to gender, the relationship between carer and care recipient or the type of care being provided. In one study in which the analysis was stratified according to care recipients' needs, differences were only found within the subgroup with cognitive impairment [19].

The current systematic review may be biased by the inclusion of only articles published in English. Articles in other languages may be relevant to this topic [e.g. 22]. The inclusion of qualitative articles and grey literature could potentially increase the variability and bias of the systematic review. Therefore, the current review focused on peer-reviewed quantitative articles. However, the large portion of duplicates identified in the article yield suggests that the search method was comprehensive in identifying published articles that met the review criteria.

This review, therefore, provides a comprehensive summary of articles published in English involving urban–rural comparisons of outcomes for carers of the elderly.

## 5. Conclusion

We found only weak and inconsistent evidence of urban–rural differences in outcomes for carers of the elderly in the community. It is likely that other variables, such as carer and care recipient factors, account for any urban–rural association with carer outcomes. It is recommended that future articles investigating the effects of caring should control for carer and care recipient characteristics to accurately assess any real urban–rural differences. In the current environment of rapid population aging, there was surprisingly little literature on the topic of this review, and well-designed articles investigating the impact of caring in urban and rural areas are needed. In particular, exploration of gender in the roles of carers and care recipients in urban and rural areas are needed, as the impact of caring may be experienced differentially by older men and women. In the meantime, there is too little evidence comparing urban and rural carers to inform clinicians and policy makers. More good-quality research is urgently needed.

## Contributors

All authors contributed to the conception, design and drafting of the manuscript. Samantha McKenzie performed all the literature searches, and these were reviewed by Deirdre McLaughlin and Annette Dobson. Samantha McKenzie drafted the majority of the manuscript and Deirdre McLaughlin, Annette Dobson and Julie Byles assisted in reviewing and editing.

## Competing interests

The authors were not involved in any competing interests.

## Ethical adherence

No ethical clearance was necessary for this systematic review.

## Provenance and peer review

Commissioned and externally peer reviewed.

## References

- [1] Pickard L, Wittenberg R, Comas-Herrera A, Davies B, Darton R. Relying on informal care in the new century? Informal care for elderly people in England to 2031. *Ageing Soc* 2000;20(6):745–72.
- [2] McConaghy R, Caltabiano ML. Caring for a person with dementia: exploring relationships between perceived burden, depression, coping and well-being. *Nurs Health Sci* 2005;7(2):81–91.
- [3] Markowitz JS, Gutterman EM, Sadik K, Papadopoulos G. Health-related quality of life for caregivers of patients with Alzheimer disease. *Alzheimer Dis Assoc Disord* 2003;17(October–December (4)):209–14.
- [4] Pinquart M, Sörensen S. Differences between caregivers and noncaregivers in psychological health and physical health: a meta-analysis. *Psychol Aging* 2003;18(2):250–67.
- [5] Marotz-Baden R, Colvin PL. Coping strategies: a rural–urban comparison. *Fam Relat* 1986;35(2):281–8.
- [6] Hancock PJ, Jarvis JA, L'Veena T. Barriers to respite: a case study of a subgroup from an older carers program in Western Australia. *Aust J Prim Health* 2006;12(2):113–23.
- [7] Williams C, Thorpe R, Harris N, Dickinson H, Barrett C, Rorison F. Going home from hospital: the postdischarge experience of patients and carers in rural and remote Queensland. *Aust J Rural Health* 2006;14(1):9–13.
- [8] Rozario PA, DeRienzi D, Rozario PA, DeRienzi D. Familism beliefs and psychological distress among African American women caregivers. *Gerontologist* 2008 Dec;48(6):772–80.
- [9] Bédard M, Koivuranta A, Stuckey A. Health impact on caregivers of providing informal care to a cognitively impaired older adult: rural versus urban settings. *Can J Rural Med* 2004;9(Winter (1)):15–23.
- [10] Bieñ B, Wojszel B, Sikorska-Simmons E. Rural and urban caregivers for older adults in Poland: perceptions of positive and negative impact of caregiving. *Int J Aging Hum Dev* 2007;65(3):185–202.
- [11] Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *J Clin Epidemiol* 2009;62(10):1006–12.
- [12] Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *J Clin Epidemiol* 2009;62(10):e1–34.
- [13] The World Bank. Country classifications; 2010 [21 May 2010]. Available from: <http://data.worldbank.org/about/country-classifications>.
- [14] Chadiha LA, Miller-Cribbs J, Rafferty J, Adams P, Pierce R, Kommidi S. Urban and rural African American female caregivers' family reunion participation. *Marriage Fam Rev* 2005;37(1/2):129–46.
- [15] Tommis Y, Seddon D, Woods B, Robinson CA, Reeves C, Russell IT. Rural–urban differences in the effects on mental well-being of caring for people with stroke or dementia. *Aging Ment Health* 2007;11(November (6)):743–50.
- [16] Lee CJ. A comparison of health promotion behaviors in rural and urban community-dwelling spousal caregivers. *J Gerontol Nurs* 2009;35(May (5)):34–40.
- [17] Lucke J, Russell A, Tooth L, et al. Few urban–rural differences in older carers' access to community services. *Aust Health Rev* 2008;32(4):684–90.
- [18] Kosloski K, Schaefer JP, Allwardt D, Montgomery RJ, Karner TX. The role of cultural factors on clients' attitudes toward caregiving, perceptions of service delivery, and service utilization. *Home Health Care Serv Q* 2002;21(3/4):65–88.
- [19] Kim S, Kim J, Stewart R, et al. Correlates of caregiver burden for Korean elders according to cognitive and functional status. *Int J Geriatr Psychiatry* 2006;21(9):853–61.
- [20] Dwyer JW, Miller MK. Differences in characteristics of the caregiving network by area of residence: implications for primary caregiver stress and burden. *Fam Relat* 1990;39(1):27–37.
- [21] Bass DM, Looman WJ, Ehrlich P. Predicting the volume of health and social services: integrating cognitive impairment into the modified Andersen framework. *Gerontologist* 1992;32(1):33–43.
- [22] Bieñ B, Wojszel ZB, Wilmańska J, Sienkiewicz J. Old age under protection. Family caregivers of the disabled people in Poland: comparative study of the rural and urban areas. Kraków: Oficyna Wydawnicza; 2001.