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Review

The Treatment of Hypertension in Care Home Residents: A Systematic Review of Observational Studies

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A B S T R A C T

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Aim: To describe the prevalence of hypertension in care home residents, its treatment, change in treatment over time, and the achievement of blood pressure (BP) control.

Method: The PubMed, Cochrane, Embase, and PsychINFO databases were searched for observational studies involving care home residents with a diagnosis of hypertension. The search was limited to English language articles involving adults and humans published from 1990 onward. Abstracts and titles were reviewed with eligible articles read in full. Bibliographies were examined for further relevant studies. The final selection of studies was then analyzed and appraised.

Results: Sixteen articles were identified for analysis, of which half were studies carried out in the United States. The prevalence of hypertension in care home residents was 35% (range 16%–71%); 72% of these were on at least 1 antihypertensive (mean 1.5 antihypertensives per individual), with diuretics being the most common. The prevalence of hypertension in study populations was greater in more recent studies ($P = .004$). ACEi/ARBs ($P = .001$) and β -blockers ($P = .04$) were prescribed more frequently in recent studies, whereas use of calcium-channel blockers and diuretics remained unchanged over time. The number of antihypertensives prescribed per patient was higher (correlation 0.332, $P = .009$), whereas fewer patients achieved target BP (correlation -0.671 , $P = .099$) in more recent studies.

Conclusion: Hypertension is common in care home residents and is commonly treated with antihypertensive drugs, which were prescribed more frequently in more recent studies but with no better BP control. These studies indicate a tendency toward increasing polypharmacy over time, with associated risk of adverse events, without demonstrable benefit in terms of BP control.

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Hypertension is common in older people, approximately 80% of those older than 80 are hypertensive,¹ and even at these ages, hypertension remains a risk factor for cardiovascular and cerebrovascular disease. A number of trials of antihypertensive medication, including the Hypertension in the Very Elderly Trial (HYVET),² the Systolic Hypertension in Europe Study (Syst-Eur),³ the Systolic Hypertension in the Elderly Program (SHEP),⁴ and the Study on Cognition and Prognosis in the Elderly (SCOPE),⁵ demonstrated that antihypertensives can bring benefits in the oldest old. However, the average trial patient bears little resemblance to the many very old people who live in care homes, who are often cognitively and physically impaired because of multiple comorbidities, who are exposed to multiple medications,⁶ and where chronic disease

management is often suboptimal.⁷ Although terminology describing long term care facilities varies from country to country,⁸ in the United Kingdom, the term “care home” describes institutions that provide “accommodation, together with nursing or personal care, for persons who are or have been ill, who have or have had a mental disorder, who are disabled or infirm, or are or have been dependent on alcohol or drugs.”⁹ They include homes with and without 24-hour on-site nursing staff, known as residential and nursing homes, respectively.

Given the marked vulnerability of care home residents, there is concern that they may not benefit from aggressive management of blood pressure in the same way that study populations do. Conversely, there are also concerns that care home residents may be undertreated for long-term conditions compared with their community-dwelling peers. To inform rational service and research responses to hypertension for patients resident in this sector, we set out to describe the prevalence of hypertension in care home residents, whether and how it is treated and how treatment patterns have changed over time.

The authors declare no conflicts of interest.

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Method

A prespecified protocol was used to search for and identify suitable articles.

Eligibility

Study characteristics

Observational studies conducted in care homes describing the prevalence of hypertension and treatments used.

Report characteristics

Non-English-language articles and studies carried out before 1990 were excluded.

Information Sources

A systematic search of the literature was conducted by searching electronic databases, and scanning reference lists of articles. The following databases were used: PubMed (1946 – present), Cochrane, Embase (1974 – present), and PsychINFO (1806 – present). The last full search was run on November 14, 2012, with updates to this until April 2013.

Search

The following search terms were used and were adapted for each database as appropriate: care home, nursing home, residential home, care homes, nursing homes, residential homes, care-home, nursing-home, residential-home, residential facilities, homes for the aged, long term care facility, long-term care facility, long-term care, hypertension, blood pressure, antihypertensive, management, treatment.

An example search strategy is provided in [Appendix 1](#).

The search was then limited to English-language articles, to studies involving humans, and to studies involving adults.

Study Selection

The title and abstract of the retrieved records were assessed against the eligibility criteria by one reviewer (T.W.) in a standardized manner. Where there was uncertainty about eligibility, the full article was reviewed. The bibliographies of eligible articles were searched for further relevant articles, which were again appraised against eligibility criteria.

Data Collection and Items

Relevant data were extracted from the articles and entered into a structured database that recorded (1) characteristics of the trial patients, (2) type of trial and country, (3) prevalence of hypertension, (4) antihypertensive agents used, and (5) achievement of target blood pressure.

Assessment of Risk of Bias

The risk of bias was assessed using the tool developed by Agency for Healthcare Research and Quality (AHRQ)¹⁰ ([Appendix 2](#)). This allowed systematic review of different potential sources of bias for each study type. The risk of bias for each study is summarized in [Table 1](#).

Method of Synthesis

Having extracted the data from the selected articles, the combined data were analyzed to test whether there had been any change in treatment patterns over time using regression analysis. Where

necessary, data from the articles were transformed to facilitate comparison.

Results

A total of 6170 citations were identified initially, and after applying limits and removing duplicates this was reduced to 2792 citations. Of these, 2765 articles were rejected after review of the abstract demonstrated that they did not meet the eligibility criteria. The full text of the remaining 27 articles was then reviewed in detail. Fifteen of these articles were then discarded because of failure to meet the eligibility criteria at more detailed review. An additional 8 articles were identified by review of the included article's bibliographies. Four of these were found to meet the eligibility criteria. In total, therefore, 16 articles were included in the review ([Figure 1](#)).

Characteristics of Studies

The characteristics of individual studies are summarized in [Table 2](#). Of the 16 articles, 8 reported studies were conducted in the United States,^{11–18} 2 each in Canada^{19,20} and the United Kingdom,^{7,21} and 1 each in Germany,²² France,²³ Italy,²⁴ and Malaysia.²⁵

Methods

All 16 studies were observational cross-sectional studies; in addition, 2 studies^{7,22} used a matched control group. Eight of the studies^{13,14,17–19,23–25} collected prospective data, the remaining 8 retrospectively analyzed data, 2 used the results of the US National Nursing Homes Survey,^{15,16} 2 used databases compiled with information from the minimum dataset used in the United States and Canada for all nursing home admissions,^{12,20} the 2 UK studies used databases built using data held by general practitioners,^{7,21} and the remaining 2 retrospectively analyzed digital and hard copy data from nursing homes.^{11,22}

The selection method was not reported in 3 of the studies,^{11,19,24} and in 4 studies the nursing homes involved were affiliated with the local university or medical center.^{13,14,18,25} Two studies used data from the National Nursing Home Survey, a nationally representative sample of US nursing homes.^{15,16}

Participants

The included studies involved 102,429 people with hypertension of a total population of 328,667. The inclusion criteria were residence in a care home or equivalent and a diagnosis of hypertension. Fish and colleagues¹¹ were more specific and included only those in which hypertension was the sole identifiable indication for antihypertensive prescription.

Objectives

The objectives of the studies varied. One study aimed to identify the cost of antihypertensive treatment.¹¹ Two studies aimed to compare the quality of care received by care home residents with community-dwelling older people.^{7,21} One set out to compare the adequacy of hypertension management in care homes and in the community.²² Ten studies aimed to describe the prevalence of hypertension and treatment patterns in care homes, and 2 of this group^{12,16} also aimed to compare this with concurrent guidelines.

Individual Study Findings

The findings of each individual study are summarized in [Table 3](#).

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