**Supplementary Material Table 1.** Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

| **SECTION** | **ITEM** | **PRISMA-ScR CHECKLIST ITEM** | **REPORTED ON PAGE #** |
| --- | --- | --- | --- |
| **TITLE** | | | |
| Title | 1 | Identify the report as a scoping review. | 1 |
| **ABSTRACT** | | | |
| Structured summary | 2 | Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives. | 2 |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach. | 3-5 |
| Objectives | 4 | Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives. | 6 |
| **METHODS** | | | |
| Protocol and registration | 5 | Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number. | 6 |
| Eligibility criteria | 6 | Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale. | 7 |
| Information sources\* | 7 | Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed. | 7-8 |
| Search | 8 | Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated. | 7-8 / Supplemental Table 2 |
| Selection of sources of evidence† | 9 | State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review. | 8 |
| Data charting process‡ | 10 | Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators. | 8 |
| Data items | 11 | List and define all variables for which data were sought and any assumptions and simplifications made. | 8 |
| Critical appraisal of individual sources of evidence§ | 12 | If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate). | N/A |
| Synthesis of results | 13 | Describe the methods of handling and summarizing the data that were charted. | 8 |
| **RESULTS** | | | |
| Selection of sources of evidence | 14 | Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram. | 8, Figure 1 |
| Characteristics of sources of evidence | 15 | For each source of evidence, present characteristics for which data were charted and provide the citations. | 9, Figure 2, Figure 3 |
| Critical appraisal within sources of evidence | 16 | If done, present data on critical appraisal of included sources of evidence (see item 12). | N/A |
| Results of individual sources of evidence | 17 | For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives. | Supplemental Table 3, Table 4 |
| Synthesis of results | 18 | Summarize and/or present the charting results as they relate to the review questions and objectives. | 8-16 |
| **DISCUSSION** | | | |
| Summary of evidence | 19 | Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups. | 16-22/ Table 1 |
| Limitations | 20 | Discuss the limitations of the scoping review process. | 22-24 |
| Conclusions | 21 | Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps. | 24-25 |
| **FUNDING** | | | |
| Funding | 22 | Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review. | Title page |

**Supplementary Material Table 2.** Search Strategy for PsycINFO

|  |  |  |
| --- | --- | --- |
| **#** | **Search** | **Results** |
| 1 | Housing/ | 4962 |
| 2 | ((housing or house) adj3 (sheltered or public or affordable or rent\* or social or subsidized or community or welfare)).ti,ab,hw. | 3404 |
| 3 | Aging/ | 53030 |
| 4 | (elder\* or older adult\* or older person\* or older people or older wom#n or older m#n or senior\* or "over 60 year\*" or "aged 60" or "over 55 year\*" or "aged 55" or "over 65 year\*" or "aged 65").ti,ab,hw. | 146157 |
| 5 | 1 or 2 | 7170 |
| 6 | 3 or 4 | 164874 |
| 7 | 5 and 6 | 1027 |

**Supplementary Material Table 3.** Characteristics of Included Studies.

| **Author, Location & Housing Type** | **Study Design, Purpose & Intervention** | **Housing Topics** | **Building and Tenant Characteristics** | **Key Findings** |
| --- | --- | --- | --- | --- |
| Agarwal et al. (2017)  Ontario, Canada  Subsidized rental housing managed by LHA | Prospective pre/post evaluation  (1 year)  **CHAP-EMS**  - two, 4-hour weekly sessions on health assessments and health education | Access to Services  Sociodemographic  Physical Health | **Buildings** (n=1):   * 260 units * 84.5% of units occupied by seniors   **Tenants** (n=79):   * 68.1% female * Average age: 72.2 years * 53% had high school education or less * 96.2% lived alone * 90.3% had family doctors * 58.3% had high blood pressure, and 19% had diabetes | There were 1,365 participant visits to CHAP-EMS.  Participants reported clinically meaningful reductions in blood pressure by the 5th visit, and 40% of those who had high blood pressure at baseline had normal blood pressure by the 5th visit.  15% of participants reported a clinically meaningful reduction in risk of diabetes.  EMS call volume decreased 25% during the program. |
| Agarwal, Angeles, et al. (2018)  Ontario, Canada  Subsidized rental housing managed by LHA | Cluster RCT  (1 year)  **CP@Clinic** - weekly drop-in program with paramedics  - health assessments, education, and referrals | Access to Services  Sociodemographic  Physical Health  Mental Health  Physical Function & Mobility  Food Security | **Buildings** (n=8):   * 170-536 units per building (Avg: 290 units) * Average of 76.3% of units were occupied by tenants aged 65+   **Tenants** (n=258):   * 74.8% female * 90.6% lived alone * 48% have less than high school education * 47.3% had low PA levels * 65.5% had high BMI * 32.5% had low fruit & vegetable intake * Common chronic conditions were hypertension (53.5%) and high cholesterol (39.9%) * 43% had poor to fair health * 62.4% had mobility problems * 47.7% had problems doing usual activities * 49.2% had anxiety or depression * 72.1% had pain or discomfort | There was a significant decrease of 0.88 EMS calls per month per 100 units between CP@Clinic and control buildings.  CP@Clinic provided significant improvements in QALY and in ability to perform usual activities (at the building and participant level), but no significant effects were observed for other health or HR-QoL indicators.  10.8% of intervention participants had potentially undiagnosed diabetes, and 38.8% were at high-risk of developing diabetes. |
| Agarwal, Habing et al. (2018)  Ontario, Canada  Subsidized rental housing managed by LHA | Cross-sectional survey of health literacy and health outcomes | Sociodemographic  Physical health  Mental Health  Physical Function & Mobility | **Buildings** (n=5):   * RGI rent at 30% of income * Some buildings (n=unknown) were designated for older adults, where all residents were 55+ and at least one resident in the unit was 65+   **Tenants:** (n=232)   * 66.7% female * Average age: 71.3 years * 70% had high school education or less * 26.3% widowed, 39.4% divorced * 32.2% had fair to poor health * 63.7% had mobility problems * 45.6% had problems doing usual activities * 47.5% had depression or anxiety * 75.2% had pain or discomfort | 82.1% had below adequate health literacy levels.  Those with high school education or less had lower odds of having adequate health literacy levels, while experiencing pain and discomfort, as well as having a BMI in the underweight and overweight categories (compared to normal weight) increased the odds of having adequate health literacy levels. |
| Agarwal & Brydges (2018)  Ontario, Canada  Subsidized rental housing managed by LHA | Ethnographic study with participant observations and semi-structured interviews with **CHAP-EMS** participants:  - weekly community health assessment program delivered by paramedics | Access to Services  Sociodemographic  Physical Health  Social Health | **Building Characteristics** (n=1):   * 260 units * Large common area with couches, a porch, and a private area for one-on-one sessions   **Tenant Characteristics** (n=15):   * 60% female * Ages ranged from 63 – 89 * 20% lived with spouse * All had at least one health problem; 80% had hypertension | Participants felt the CHAP-EMS clinic filled a health care need, as there was not enough time in the current health system to address all their concerns.  Some residents used CHAP-EMS as an alternative to seeking medical attention elsewhere.  Participants felt that CHAP-EMS helped them access health knowledge and resources to manage their current and future health needs, and many made lifestyle changes (e.g., changing diet) following appointments with the paramedics.  The program also served as an opportunity to connect with neighbours, hear weekly building gossip, and organize groups events. Relationships formed between building residents, highlighting the importance of the social aspect of the program in enhancing wellbeing. |
| Agarwal et al. (2019)  Ontario, Canada  Subsidized rental housing managed by LHA | Cluster RCT  (1 year)  **CP@Clinic**  - weekly drop-in program with paramedics  - health assessments, education, and referrals | Access to Services  Sociodemographic  Physical Health  Mental Health  Physical Function & Mobility  Food Security | **Buildings** (n=30)   * Average of 139 units/building * Average of 74.1% of units were occupied by tenants aged 55+   **Tenants** (n=678)   * 75.9% female * 89.8% lived alone * 45.1% had less than high school education * 46.3% had low PA * 69% had high BMI * 33.8% had low fruit & vegetable intake * Common chronic conditions were hypertension (54.4%) and high cholesterol (37.4%) * 40.4% had poor to fair health * 60.5% had mobility problems * 44.1% had problems doing usual activities * 48.7% had anxiety or depression * 71.9% had pain or discomfort | There was a decrease of 0.9 calls per month per 100 units in EMS call rates between buildings with CP@Clinic and control buildings (19.4% reduction).  CP@Clinic buildings did not show any improvements in HR-QoL indicators compared to control buildings.  Compared to controls, CP@Clinic participants showed significant improvements in all HR-QoL domains, report a QALY gain, and improved CANRISK scores. |
| Ahrentzen et al. (2015)  Arizona, USA  Subsidized apartment (Section 8) managed by LHA | Single group panel pre/post design  (1 year)  **Retrofit -** a green retrofit renovation to improve energy efficiency | Sociodemographic  Unit Condition | **Building** (n=1):   * 116 units  (3 stories) * All one-bedroom  (57.5 m2)   **Tenants** (n=57 from 53 units)   * Average age 73  (range: 62 - 92) * 74% were female * 88% lived alone | There was a 19% reduction in energy consumption post renovation.  Significant reduction in the frequency that units exceeded 27ºC. Reductions in high temperatures were associated with significantly improved QoL, reduced emotional distress and improved sleep.  Satisfaction with unit remained unchanged with retrofit. |
| Baumgarten et al. (1988)  Quebec, Canada  Government subsidized apartment | Quasi- experimental design with control group using structured interviews  (15 months)   **Community Organizer** worked full-time in the building to coordinate *Mutual Help Network* to increase socialization among tenants | Housing Staff  Tenant Governance  Sociodemographic  Mental Health  Social Health | **Building** (n=2)   * 89.6% of tenants over age 65   **Tenants** (n=95)   * 55.6% over age 75 * 72.6% female * 24.2% married * 41% had attended elementary school * 28.4% French Canadian * 43.2% Jewish | Previous unsuccessful attempts to organize tenant committees and activities hindered enthusiasm for program, and multiple ethnic and language groups created practical problems for coordinating helping opportunities  A total of 230 individual services were exchanged (94% friendly visits) and 28 group activities were organized (e.g., knitting, lectures, meals, and bingo).  Frequent participants in *Mutual Help Network* were more likely to be female, less educated, and unmarried.  Compared to control buildings, there was no significant increase in number of social ties or social support satisfaction for buildings with *Mutual Help Network*, but frequency of depressive symptoms increased. |
| Bazargan (1994)  Louisiana, USA  Subsidized public housing | Cross-sectional survey on the relationship between personal and environmental characteristics and fear of crime | Safety & Security  Sociodemographic  Physical Health  Social Health | **Buildings** (n=16)   * 4 to 9 floors high, with 50-150 units * Mix of age-segregated and age-integrated buildings   **Tenants** (n=375)   * 80.4% female * 32.5% were aged 62-69; 45.5% aged 70-79; and 22% aged 80+ * 19.1% completed high school * 68.8% earned less than $500 per month; 20.4% earned between $501 and $750 per month * 100% Black * 69.6% rated health as fair or poor | Over half (53.2%) reported that crime was a very serious or somewhat serious problem, and 54.3% reported they often or sometimes avoided leaving their home due to risk of crime.  Black senior tenants with less education, more loneliness, and less trust in their neighbours and living in age-integrated buildings were more likely to experience fear of crime *at* home*.*  Elderly black women with higher levels of loneliness, experienced indirect victimization, frequently watched the news, and lived in an age-segregated building were more likely to report fear of crime *outside* the home.  Fear of crime at home and outside the home increased the likelihood of avoiding leaving home. |
| Bernstein (1982)  California, USA  Elderly housing managed by HUD | Cross-sectional telephone interview with housing staff (n=232) examining housing policies and practices with follow-up interviews | Housing Policy  Housing Staff  Access to Services  Mental Health  Physical Function & Mobility | **Buildings** (n=87)   * Each building had an on-site staff member   **Tenants** (not applicable) | Perceived emotional stability, health conditions and personal care needs were the most commonly reported factors impacting tenant admission.  76% had a formal policy on tenant retention, focusing on ADL/IADL performance; most noted that tenants usually leave voluntarily.    Most common reason tenants were asked to leave were mental decline (66%) and posing health and safety risks (32%); most common reasons tenants voluntarily left were needing ADL support (67%), to live with family (60%), and nursing home admission (55%).  77% provided health services in partnership with community agencies; 52% provided on-site meals; 49% had door-to-door transit or subsidized taxis; 22% provided housekeeping and chore services. |
| Bingham & Kirkpatrick (1975)  Multi-states, USA  Public housing managed by LHA | Cross-sectional survey of housing policies and on-site services completed by community service directors at the housing authority (n=47) | Access to Services  Tenant Governance | **Buildings** (n=6)   * None given   **Tenants** (not applicable) | Several services provided included immunization clinics (87%), medical services (89%), legal aid (87%), and financial counselling (83%).  Social activities provided directly (by housing) or indirectly (through partnerships) included crafts (94%), lectures (91%), movies (87%), meals (85%), dances (78%) and religious services (60%).  Only 30% had routine transportation available; 32% also noted adequate public transit nearby.  92% had tenant associations for tenants to communicate concerns and issues to housing authorities, coordinate with agencies for programs/services.  More engaged tenants and larger staff were predictive of greater service provision. |
| Blandford et al. (1989)  Manitoba, Canada  Elderly housing projects managed by LHA | Qualitative interviews with tenants and service providers pre/post implementation of a TRC  (1 year)  **TRC** worked full-time to develop supportive services in the building and liaise with providers to increase tenant access | Housing Staff  Access to Services  Tenant Governance  Sociodemographic | **Buildings** (n=1)   * None given   **Tenants** (n=172)   * 77% female * 65% born in Canada * 47% had at least elementary education * 56% were widowed | Tenants expressed more tolerant attitudes towards other tenants after TRC was implemented.  There were no differences in how frequently tenants accessed nursing, meals, and housekeeping and language services. Information services, the aging specialist, and the tenant’s association were accessed more frequently after TRC was implemented.  Use of homecare services increased from 20% to 28% post TRC, which stabilized use of physician services and inpatient hospital stays.  Service providers felt the TRC was an important feature of the building, reducing the frequency of inappropriate requests and providing valuable information on the interests and physical/mental health of tenants. |
| Blandford et al. (1990)  Manitoba, Canada  Elderly housing projects managed by LHA | Cross-sectional survey of tenant characteristics by housing type:   * EPH * Supportive Housing * Private dwelling | Access to Services  Sociodemographic  Physical Health | **Buildings** (n=30)   * 15 had no services onsite * 15 had some on-site services, such as meals, information and referral   **Tenants** (n=300)   * None given | Compared to seniors in private dwellings, those in EPH were more likely to be female, earn less than $750/month, have more chronic  conditions, and spend more sick days in bed  Tenants in EPH without on-site services had more chronic conditions than tenants in EPH with on-site services; no other differences were reported. |
| Blanghard (1964)  Connecticut, USA  Public housing project managed by LHA | Outcome evaluation of an onsite medical exam and referral program | Access to Services    Sociodemographic  Physical Health  Mental Health | **Buildings** (n=1)   * None given   **Tenants** (n=100)   * 57% over age 75 * 56% female | 64% of tenants had medical conditions that required further evaluation or treatment, including for cardiovascular, diabetes, arthritis, and psychiatric conditions.  88% of tenants needing medical care accepted a referral for further treatment. |
| Blumberg et al. (2010)  Georgia, USA  Public housing apartment managed by LHA | Evaluation of the **Lifelong Community** framework  - promotes accessible housing and transportation options  - encourages healthy lifestyles  - expands access to services | Housing Staff  Access to Services  Sociodemographic  Social Health | **Buildings** (n=1)   * Building has an RSC * Service providers work on-site to provide services   **Tenants** (n=272)   * 81% of tenants are seniors (25% over age 80) * 62% of tenants are immigrants and do not speak English * Average length of tenancy for those over age 80 was 17 years | Implementation of the strategy:  - ongoing meetings with housing and mental health providers to discuss issues, barriers and solutions for handling crises  - developing strategies for the RSC to identify high and low-risk tenants with deteriorating mental health  - conducting training sessions for building staff and tenants on supporting seniors with complex needs  - providing tenants an opportunity to designate the RSC as their contact to notify a service provider if an evaluation is needed  - expanding information and access to services by including a search-able web-based database  Key outcomes of the initiative:  - Increased to resources, professionals, and support services  - Enhanced efficiency of services that are better coordinated  - Community partnerships and collaborations between health and housing  - Empowering tenants to become more self-sufficient through education and training  - Increased interactions with tenants and reduced social isolation  - Expanded relationships of trust between tenants and building staff beyond housing-related issues |
| Bojrab et al. (1988)  Indiana, USA  Public housing apartment | Cross-sectional survey of depression | On-site Service  Sociodemographic  Physical Health  Mental health | **Buildings** (n=1)   * On-site health centre operated by a university   **Tenants** (n=176)   * 70% female * Average age: 72.6 years * Years of education: 9.1 years * 50% white * 83% lived alone * 63.1% in poor or fair health | 23.3% had depression.  Depressed senior tenants spent more days in bed, visited their physician more often, had poorer health, and poorer physical function.  Depression was predicted by lower physical function, living alone, lower education, and spending more days in bed. |
| Boles & Jackson (1982)  Alabama, USA  Public housing complex built under HUD-221  (RGI 25%) | Non-randomized matched control trial  **Energy Education Program**  **-** 17 low-cost energy conservation techniques | Unit Condition  Sociodemographic | **Buildings** (n=1)   * 50-unit complex * Fully electric units that are sub- metred   **Tenants** (n=26)   * 100% female * 100% single * Aged 62+ (19.2% under age 65; 11.5% over age 80) | Non-significant increases among treatment group on attitudes towards importance of saving energy.  Non-significant increases among treatment group on energy conservation quiz.  No significant effect of intervention on energy consumption. Tenants were already using small amounts of energy; further decreases in consumption were difficult. |
| Bowie (2003)  Florida, USA  Public housing managed by LHA | Post-disaster evaluation of health needs  **Crisis Intervention**  - university student-led assessment of emergency needs, health issues, and perceptions of situation | Sociodemographic  Physical Health  Mental Health | **Buildings** (n=8)   * Directly impacted by Hurricane Andrew   **Tenants** (n=137)   * 14% over age 80 * Common chronic conditions were hypertension (15.5%), cardiovascular disease (14.2%), diabetes (10.6%), and arthritis (9%) | 22% had an urgent need to see a physician or mental health specialist.  13% complained of being unable to see their physician, fill prescriptions, obtain over-counter medications, or access needed medical supplies after the hurricane. |
| Boyer (1981)  Wisconsin, USA  Elderly public housing | Cross-sectional survey of health perceptions in white versus black senior tenants | **Micro:**  Sociodemographic  Physical Health  Social Health  Physical Function & Mobility | **Buildings** (n=6)   * None given   **Tenants** (n=414)   * 75.8% female * Median age: 74 years * 24.1% black * 80.9% had at least one chronic condition * Common chronic conditions were dizziness (38.6%), hypertension (36.5%), and shortness of breath (33.3%) * 57.2% do not participate in any non-church organizations | Health perception was significantly lower for Black versus White tenants  Higher percentage of black tenants (12%) had low functional mobility compared to white tenants (9.6%).  White tenants were more likely to have no chronic conditions (20% versus 15% in blank tenants), while black tenants were more likely to report 3+ chronic conditions (32% versus 14% in white tenants). |
| Brydges et al. (2016)  Ontario, Canada  Subsidized rental housing managed by LHA | Qualitative interviews with tenants on perceptions of **CHAP-EMS**  - weekly community health assessment program delivered by paramedics | Access to Services  Sociodemographic | **Buildings** (n=1)   * Approximately 260 senior tenants lived in the building   **Tenants** (n=15)   * 60% female * Range in age: 63-89 | Senior tenants had close and trusting relationships with paramedics, which was in contrast to impersonal experiences with other health care providers.  Paramedics were described by tenants as welcoming, caring and thoughtful.  Tenants reported attending the sessions for health information but also to socialize with the paramedics.  Paramedics were viewed as health advocates for the entire building, and they introduced a new sense of support and security. |
| Buchner et al. (1997)  Washington, USA  Subsidized public rental housing managed by LHA | Cross-sectional survey of health promotion and disease prevention behaviours comparing:  - public housing tenants  - participants in a Health Maintenance Organization (HMO) | Sociodemographic  Social Health  Substance Use  Physical Function & Mobility | **Buildings** (n=unknown)   * None given   **Tenants** (n=199)   * 57% over age 75 * 74% female * 64% had only high school education * 84% had annual incomes < $10,000 * 92% widowed and 91% lived alone * 75% white * 54% had vision problems and 52% had hearing problems * 76% have a close circle of friends * 64% attended meetings or clubs * 72% had a physical in past year * 87% have less than 1 drink/week * 18% experience high stress * 25% have severely restricted activities | Seniors living in public housing were more likely to be female, older, widowed, live alone, have less education and lower incomes compared to HMO seniors.  Seniors living in public housing were more likely to report restricted activities, have poorer physical functioning, lower life satisfaction, and more stress.  Seniors living in public housing were more likely to have vision and hearing problems but were more likely to have had a general physical exam in the past 12 months. |
| Carp, 1967  Texas, USA  Elderly public housing managed by LHA | Longitudinal cohort study with comparison group on psychosocial wellbeing (12-15 months)    **Purpose-Built Seniors’ Public Housing** | Access to Services  Unit Condition  Mental health  Social health | **Buildings** (n=1)   * 9 stories (8 residential) * 184 units (152 1-bedroom, 16 2-bedroom, 16 efficiency units) * 2 self-service elevators and one laundry room per floor * Senior centre on ground floor   **Tenants** (n=295)   * 352 applied for housing (204 moved in and 148 did not) * Median age at baseline: 72 years * 79% female | Those who moved into the new public housing building reported significant increases in rates of happiness, participated in more leisure activities, had more close friends, and had fewer health complaints.  Tenants who did not move into the building experienced no change in behaviour or attitude over the 15-month period. |
| Carp, 1975a  Texas, USA  Elderly public housing managed by LHA | Longitudinal cohort study with comparison group on effects of improved housing on morale and life satisfaction  (8 years)  **Purpose-Built Seniors’ Public Housing** | On-Sie Services  Unit Condition    Mental Health | **Buildings** (n=1)   * 9 stories (8 residential) * 184 units (152 1-bedroom, 16 2-bedroom, 16 efficiency units) * 2 self-service elevators and one laundry room per floor * Senior centre on ground floor   **Tenants** (n=295)   * 352 applied for housing (204 moved in and 148 did not) * Median age at baseline: 72 years * 79% female | Proportion of tenants reporting no major life problems increased over 8 years (from 25% at baseline to 74%), while non-tenants remained the same (27% and 29%, respectively).  Tenants had higher levels of happiness compared to non-tenants after 8 years. |
| Carp, 1975b  Texas, USA  Elderly public housing managed by LHA | Longitudinal cohort study with comparison group on housing satisfaction (8 years)  **Purpose-Built Seniors’ Public Housing** | Access to Services  Unit Condition | **Buildings** (n=1)   * 9 stories (8 residential) * 184 units (152 1-bedroom, 16 2-bedroom, 16 efficiency units) * 2 self-service elevators and one laundry room per floor * Senior centre on ground floor   **Tenants** (n=295)   * 352 applied for housing (204 moved in and 148 did not) * Median age at baseline: 72 years * 79% female | At the end of the 8-year period, 90% of tenants rated their housing as good or very good, compared to none of the non-tenants.  Only 9% of tenants felt housing costs were high, compared to 88% of non-tenants. |
| Carp, 1976  Texas, USA  Elderly public housing managed by LHA | Longitudinal cohort study with comparison group on effects of improved housing conditions (8 years)  **Purpose-Built Seniors’ Public Housing** | Housing Staff  Access to Services  Unit Condition | **Buildings** (n=1)   * 9 stories (8 residential) * 184 units (152 1-bedroom, 16 2-bedroom, 16 efficiency units) * 2 self-service elevators and one laundry room per floor * Senior centre on ground floor   **Tenants** (n=295)   * 352 applied for housing (204 moved in and 148 did not) * Median age at baseline: 72 years * 79% female | Tenants were highly satisfied with their apartment, usually due to the conditions of the unit.  61% liked the modern conveniences the apartment provided (including the modern kitchen and bathroom, well-equipped laundry rooms, and access to senior centre).  Challenges with management and the lack of privacy were disappointments that increased from year 1 to 8 (7% to 20% for management, and 3% to 10% for privacy).  Tenants suggested future buildings could have phones in the bedroom (43%), more closet space (37%), use kitchen ranges instead of cooktops (20%) and commercial laundry machines (11%). |
| Carp, 1978  Texas, USA  Elderly public housing managed by LHA | Longitudinal cohort study with comparison group on effects of improved housing activities and use of time  (8 years)  **Purpose-Built Seniors’ Public Housing** | Access to Services  Unit Condition  Social Health | **Buildings** (n=1)   * 9 stories (8 residential) * 184 units (152 1-bedroom, 16 2-bedroom, 16 efficiency units) * 2 self-service elevators and one laundry room per floor * Senior centre on ground floor   **Tenants** (n=295)   * 352 applied for housing (204 moved in and 148 did not) * Median age at baseline: 72 years * 79% female | After 8 years, tenants reported more leisure pastimes (15 versus 5 for non-tenants) and had higher rates of participation (69% versus 56% for non-tenants).  After 8 years, tenants reported less than an hour of passive use of time (i.e., doing nothing), while non-tenants reported an average of 3 hours per day. |
| Carp & Carp (1980)  Texas, USA  Elderly public housing managed by LHA | Longitudinal cohort study with comparison group examining social engagement (8 years)  **Purpose-Built Seniors’ Public Housing** | Access to Services  Unit Condition  Social Health | **Buildings** (n=1)   * 9 stories (8 residential) * 184 units (152 1-bedroom, 16 2-bedroom, 16 efficiency units) * 2 self-service elevators and one laundry room per floor * Senior centre on ground floor   **Tenants** (n=295)   * 352 applied for housing (204 moved in and 148 did not) * Median age at baseline: 72 years * 79% female | Over 8 years, disengagement scores decreased among tenants, suggesting reengagement for this group.  Number of tenants who cited a lack of companionship as a major problem decreased for tenants (from 6% to 0%) but increased for non-tenants (from 6% to 22%).  Tenants engaged in more organized activities, rising from 51% at baseline to 60% at 8-year follow-up. Non-tenants experienced a decrease in their engagement in organized activities, going from 39% to 25% over the same time period.  Most tenants (57%) reported maintaining old friends and establishing new ones, compared to 55% of non-tenants who had maintained old friends but not made any new ones. |
| Chen 2016  Hong Kong  Subsidized public rental housing estates | Cross-sectional survey of depression and proximity to community facilities | Access to Services  Sociodemographic  Mental Health  Social Health  Physical Function & Mobility | **Buildings** (n=4)   * High-rise buildings in urban areas * Built between 1958 and 1970   **Tenants** (n=400)   * 56.5% female * Average Age: 80.2 years * 44.7% unmarried * 79.2% had less than secondary education * 32% received welfare * 23.5% fallen in past year | 17.3% of senior tenants were depressed.  Depression was lower among those who: had no ADL impairments, had higher incomes, had support from neighbours and friends, could walk to medical appointments. Those who had support from community organizations had higher depression.  Tenants received support for daily living by family that lived with them (43.3%), other family and relatives (47%), neighbours or friends (8.8%) or community organizations (11.5%).  Most senior tenants were within walking distance of recreation (72.5%), medical care (71%), necessities (71%), and restaurants (68.5%). |
| Cheng, 2002  Hong Kong  Subsidized public rental housing estates | Cross-sectional survey of health and economic conditions | Sociodemographic  Physical Health  Mental Health  Physical Function & Mobility | **Buildings** (n=7)   * None given   **Tenants** (n=450)   * 59.1% female * 16% aged 80+ * 59.1% married * 10% live alone * 90% less than secondary education * 95.8% retired * 45.1% no somatic conditions * 22.9% had no physical illness * 71.1% have no ADL impairments * 45.8% have no mental health symptoms * 56.9% have fair, poor or very poor self-rated health | Most common somatic complaints were fatigue (26.2%), stiff joints (19.1%) and headaches (16.4%).  Average number of physical conditions was 1.5 (range: 0-6), most commonly arthritis (52.2%), hypertension (27.1%) and diabetes (11.6%).    Financial sufficiency was rated as more than enough (1.6%), enough (33.5%), just right (40.7%), insufficient (19.1%) or very insufficient (5.1%) by tenants.  Insufficient financial situations were linked to poorer health, including more somatic complaints, more physical illness, poor self-rated health, more ADP impairments, and more mental health conditions. |
| Chi et al. (2013)  California, USA  Publicly subsidized (Section 8) housing managed by HUD | Cross-sectional survey to identify the unmet needs of senior tenants | Access to Services  Sociodemographic  Physical Health  Mental Health  Social Health  Cognition  Physical Function & Mobility | **Buildings** (n=1)   * Owned by a non-profit agency * 98% of tenants are from China, Hong Kong, and Taiwan, and cannot speak English   **Tenants** (n=120)   * Average age: 83.6 years * 71.7% female * 45% married; 49.2% widowed * 55% had less than high school * 73.1% rated their health as fair, poor or very poor | Majority of respondents had difficulty with ADLs (particularly stair use and bathing), and IADLs (including shopping, housekeeping, food preparation, laundry and transportation).  73.9% reported having poor mental health, 33% had depression, and 89.5% reported high levels of loneliness.  97.5% had at least one child and 77% reported visiting with their children at least once per week.  58.3% had normal cognitive functioning.  79.2% were receiving in-home supportive services, and 75% were satisfied with their service providers. |
| Cook et al. (2000)  Maryland, USA  Public housing developments for older adults | Cross-sectional survey of life-satisfaction | Sociodemographic  Mental Health  Social Health  Substance Use | **Buildings** (n=6)   * None given   **Tenants** (n=831)   * 76.7% female * 9.7% aged 85+ * 91.2% live alone * 51.9% widowed; 8.9% married * 52.5% had less than 8 years education * 55.7% have monthly incomes less than $584 * 90.1% have a confidant * 77.1% had someone to help with daily tasks if needed * 25.1% were current drinkers | Tenants with higher social dysfunction, depression and more somatic symptoms reported lower life-satisfaction.  Tenants with higher life-satisfaction reported having a confidant, were supported by their religious beliefs, had instrumental social support, and were female.  Current drinkers had lower life satisfaction, which was predicted by social dysfunction, depression, and male sex. |
| Cotrell & Carder (2010)  Oregon, USA  Publically subsidized housing (Section 8) | Cross-sectional survey of health-related needs | Access to Services  Sociodemographic  Physical Health  Mental health  Social Health  Cognition  Physical Function  & Mobility | **Buildings** (n=1)   * 30 years old * High-rise apartment, 17 floors * Recently purchased by a non-profit, faith based LTC provider   **Tenants** (n=133)   * Average age: 75.5 * 75% female * 24% had less than high school education * 20% had poor vision; 17.7% had poor hearing * Common chronic conditions: hypertension (64%), arthritis (63%) * 30% fallen in past year * 25% used a cane or walker * 22.4% had cognitive impairment * 29.5% had depression * Median years of tenancy: 6 (range: 2 months to 23 years) | Tenants had an average of 4.3 chronic conditions and were taking an average of 5.4 medications.  Most were independent in ALDs and IADLs, except for heavy housekeeping (53.1% had difficulty), carrying objects (35.4% had difficulty) and transportation (33.2% had difficulty).  Tenants frequently reported difficulty with stairs (54.6%), walking (52.3%), balance (48.5%), lifting (47.7%), carrying (43.8%), and reaching (32.3%).  31.5% were found to be at risk of social isolation, 9.4% were often lonely, and 73.8% felt there was more opportunity to build new relationships.  91.5% visited a doctor and 21.5% had been admitted to hospital in the past 6 months.  Access to homecare was limited, with 21.7% accessing homemakers, 14% receiving help with meal preparation, 11.6% receiving help with personal care.  Only 10.9% accessed mental health services. |
| Cummings et al. (2013)  Tennessee, USA  Public housing managed by LHA | Cross-sectional survey of substance use | Sociodemographic  Substance Use | **Buildings** (n=1)   * None given   **Tenants** (n=187)   * 45.5% female * 39.9% aged 50-65 and 60.1% aged 65+ * 73.6% African American * 42.7% had less than high school * 49.2% retired * 79.1% have monthly incomes less than $900 * 58.3% reported they do not have sufficient funds | 43.3% reported illegal drug use and 44.4% reported drinking in past 30 days.  39.1% of tenants were problem drinkers (at-risk, hazardous, or binge drinkers).  Problem drinkers were more likely to be men, African American, unemployed, engaged in illegal drug use, and were long-term smokers. |
| Deimling et al. (1983)  Ohio, USA  Public housing managed by LHA | Cross-sectional structured interviews examining wellbeing, social involvement and social activities | Unit Condition  Sociodemographic  Mental Health  Social Health | **Buildings** (n=unknown)   * Ranged from 29-639 units * Predominantly 1-bedroom apartments * Mix of age segregated and age-integrated buildings   **Tenants** (n=326)   * 78% female * 74% unmarried * Average age: 73 * 56% were from minority groups * Average monthly income between $150 and $200 | Life satisfaction was consistent between tenants in age-segregated vs age-integrated buildings.  Black tenants in both housing types had greater life satisfaction than white tenants.  White tenants were involved in fewer social relationships and group activities than black tenants.  Among the full sample, race and health were significant predictors of life satisfaction; perceived health was the best predictor for the white subsample, while group activities were the best predictor for the black sample. |
| Dibble et al. (1967)  New York, USA  Public housing managed by LHA | Cross-sectional survey of nutritional status | Sociodemographic  Physical Health  Food Security | **Buildings** (n=unknown)   * No common dining facilities on site   **Tenants** (n=214)   * Average age: 71.3 * 52% married * 98% white * 95% retired * 50% had less than high school education * 88% had at least one chronic condition | 78% cooked their own meals; 23% noted their spouses cooked.  37% were on special diets and 35% were taking nutritional supplements.  67% of women and 46% of men were overweight.  Many tenants (ranging from 3% to 43%) were below adequate nutrition levels on hematocrit, ascorbic acid, carotene, vitamin A, TPP-effect hexose, hexose, thiamine excretion, and riboflavin excretion. |
| Dibner et al. (1982)  Massachusetts, USA  Public housing | Program implementation and outcome evaluation  (29 months)  **Lifeline:**  Portable help button, and operator calls back to assess the situation and send appropriate help | Access to Services | **Buildings** (n=unknown)   * None   **Tenants** (n=355)   * 100% lived alone * Functionally impaired or medically vulnerable | Only 65% (n=209) accepted the Lifeline.  A total of 120 emergencies were reported over the year (average 0.44 emergencies per client per year). 88 emergencies were due to illness or accidents; 32 emergencies were environmental (e.g., assaults, broken water pipe).  False alarm rate was 0.56 calls per client per month.  Lifeline was viewed as a good service by 88%; 29% continued paying for the service after the program was completed. |
| Diwan et al. (2018)  California,  USA  Subsidized seniors housing managed by LHA | Pre/post design with no comparison group  (4 months)  **Wellness Program**  Included 6 programs to promote aging in place: on-site health monitoring, nutrition demonstrations, balance, home safety and sleep workshops, and recreation activities | Access to Services  Sociodemographic  Physical Health  Mental Health | **Buildings** (n=1)   * Housed 160 residents over age 60   **Tenants** (n=126)   * 68% female * Average age: 78.4 * 69% primarily spoke Mandarin/Cantonese * 25% had three or more chronic conditions (average: 2) * 76% reported health as fair or poor | Participants were recruited through flyers in multiple languages and monthly activity calendars.  79% (n=126) tenants participated in some part of the wellness program, for a total of 744 resident contacts.  At pre-test, tenants scored low on health components of the SF36, and physical and mental health scores were below the national norms for seniors.  Tenants who participated in any program reported higher self-rated health after four months, but no changes were observed in specific health dimensions. |
| Elliott et al. (2015)  Alabama, USA  Subsidized senior housing managed by LHA | Medical examination of vision function (cross-sectional) | Sociodemographic  Physical Health  Cognition | **Buildings** (n=14)   * None given   **Tenants** (n=238)   * 73.9% female * 29.4% over age 80 * 74.8% African American * 41.5% less than high school education * 44.3% widowed * 98.3% live alone * Common chronic conditions were high blood pressure (75.6%), heart problems (41.8%) and diabetes (39.1%) * 13% had cognitive problems | 40.5% had cataracts, 4.2% had age-related macular degeneration, and 13.5% had glaucoma.  40.1% failed the distance visual acuity test, 58.1% failed the near visual acuity test, and 65.3% failed the contrast sensitivity test.  Tenants with self-reported heart problems tended to have worse vision. |
| Fisch et al. (1968)  New York, USA  Low rent public housing managed by LHA | Psychiatric and medical exam exploring chronic brain syndrome (CBS; cross-sectional) | Housing Staff  Unit Condition  Sociodemographic  Cognition | **Buildings** (n=1)   * Have a housing assistant on site   **Tenants** (n=69)   * 62.3% female * Median age: 74 * 58% lived alone * 78.3% less than high school education * 15.9% African American | 53% reported possible (36%) or definite (17%) CBS.  Tenants with CBS were more likely to be older, female, live alone, and have poorer social relationships.  Tenants with CBS presented no special problems to housing management; housing assistants did not feel the CBS tenants had more forgetfulness, confusion or disorientation.  CBS tenants were more frequently dissatisfied with their housing. |
| Fox et al. (2017)  Ireland  Social housing managed by Irish housing association | Census survey using a stratified random sample within six geographical regions | Access to Services  Unit condition  Safety  Sociodemographic  Physical health  Social health | **Building Characteristics** (n=unknown)   * None given   **Tenants:** (n=172)   * 40% female * Age ranged from 60 to 90% (39.7% aged 60-64, 28.5% aged 65-69, 15% aged 70-74, 16.2% 75+ * 69.1% lived alone * 21.9% married and lived with partner * 57.3% find it fairly or very difficult to make ends meet with their current household income * 59.5% reported their health as fair, poor, or bad * 20.9% had a mobility problem * 47.8% were living with an illness or disability * In the past year, 48.8% had accessed a general practitioner, 37.2% had visited a hospital outpatient centre, 18.6% had seen a physiotherapist, and 11% an occupational therapist * 19% were unhappy with their current home * 11.6% felt their home only met some their physical needs, and 3.5% felt their home was totally inappropriate for their needs * 25% experienced days each week with no contact with friends or family * 36.8% participated in social activities at a local organization | 65.3% of tenants would prefer to stay in their current home than move. Among those who wanted to move, it was most commonly due to unsuitability of housing, safety concerns, needing more supports, or wanting to live closer to family and friends.  8.6% of tenants felt their home could not easily be adapted to meet their needs as they age; tenants identified several accessibility features that were missing from their home, including: bathroom aids, warden call buttons, front door spyhole and keychain, intercom, adequate storage for walking aids and wheelchairs, and parking and charging space for mobility scooters.  Many tenants experienced “fuel poverty” and found it difficult to heat their unit.  Less than 5% of tenants felt their neighbourhood was unsafe; however, 24% reported an experience in their building that left them feeling unsafe, usually due to antisocial behaviours.  When comparing housing experiences between tenants in standard social housing to tenants living in sheltered (assisted) housing, those in sheltered housing were more satisfied with the physical design of their unit, and reported more positive outcomes related to housing satisfaction, social engagement, and safety. |
| Gachaw et al. (1991)  Indiana, USA  Public housing apartment | Longitudinal survey of depression  (1 year) | Access to Services  Sociodemographic  Mental health | **Buildings** (n=1)   * On-site health centre operated by a university   **Tenants** (n=124)   * 75% female * Average age: 72.6 * 83.9% lived alone | 8.9% of tenants had persistent depression and 21.8% had episodic depression.  The single item most predictive of episodic or persistent depression was “I felt that I could not shake off the blues even with help from my family and friends.” |
| Garcia (1985)  Florida, USA  Government subsidized housing complex | Cross-sectional survey of needs and health service utilization | Access to Services  Sociodemographic  Physical Health  Mental Health  Social Health | **Buildings** (n=1)   * None   **Tenants** (n=45)   * 66.7% female * Average age: 70.7 * 80% had less than 8 years education * 38% spoke English * 42% married; 33% widowed * Average monthly income of $339.91 * Income sources: social security (93%), employment (16%), savings (15%), family (9%) and pension (4%) * 73.3% had poor/fair health * Common chronic conditions: hypertension (46%), nervous conditions (40%), diabetes (27%), arthritis (27%), and heart problems (22%) | None of the tenants reported their health as “excellent” and 69% reported their health was worse now compared to five years ago.  44% received help from public agencies, 33% received help from family, and 22% received help from private agencies.  56% indicated they were not satisfied with their life situation due to poor health, loneliness, depression, and loss of income. |
| Gibler (2003)  Multi-state, USA  Subsidized rental housing (RGI 30%) | Cross-sectional survey of health and housing conditions among  - subsidized senior renters  - non-subsidized senior renters | Unit Condition  Sociodemographic  Physical Health  Mental Health  Physical Function & Mobility | **Buildings** (n=unknown)   * None given   **Tenants** (n=397)   * 74% female * Average age: 80 years * 70% white * 64% widowed * 65% less than high school education * 64% earned less than $10,000 per year, with a median income of $8,388 * Income sources were social security (92%), savings (32%), pension (24%), food stamps (27%) * Average rent is $203.85 * 50% rated health as fair/poor * Common chronic conditions: arthritis (68%), high blood pressure (61%), heart conditions (35%) * 20% had psychiatric conditions * 51% had at least one ADL impairment, predominately with walking (35%), dressing (24%), and getting in/out of bed (25%) * 36% had at least one IADL impairment, predominately grocery shopping (30%) | Subsidized and nonsubsidized renters were similar in age and gender, but subsidized senior renters were more likely to be black, Hispanic, widowed, and have less than high school education.  Subsidized renters had lower household incomes, fewer assets, and were more likely to rely on food stamps. Non-subsidized renters were more likely to have savings, and a pension.  Subsidized renters had poorer self-rated health, and a higher prevalence of chronic and psychiatric conditions. Subsidized tenants had more difficulties with ADLs and grocery shopping.  Subsidized tenants were more likely to rate their housing conditions as fair/poor; 17% of subsidized tenants rated their housing conditions as fair/poor; common adaptive features in subsidized housing included: grab bars (66%), call devise (57%), ramps (47%), wheelchair access (47%) |
| Gonyea et al. (2018a)  Northeast, USA  Subsidized housing development | Cross-sectional survey of depression | Sociodemographic  Physical Health  Mental Health  Social Health  Physical Function & Mobility | **Buildings** (n=1)   * None given   **Tenants** (n=216)   * 73% female * Average age: 67.4 years * 82% unmarried * 50.2% had less than high school education * 50.4% Black * Average of 2.8 chronic conditions * 53% had at least 1 ADL impairment * 33.% were lonely   26% had depression | Demographic characteristics were not associated with loneliness and depression.  Senior tenants with more chronic conditions, greater functional disability, poor self-rated health, more stress and greater loneliness and higher levels of depression. |
| Gonyea et al. (2018b)  Northeast, USA  Subsidized housing development | Cross-sectional survey of mental health and safety | Safety  Sociodemographic  Physical Health  Mental Health  Social Health  Physical Function and Mobility | **Buildings** (n=1)   * None given   **Tenants** (n=216)   * 73% female * Average age: 67.4 years * 82% unmarried * 50.2% had less than high school education * 50.4% Black * Average of 2.8 chronic conditions * 53% had at least 1 ADL impairment * 26% had depression | 80% of tenants reported feeling ‘very safe’ in their neighbourhood compared to 63% at night  60% of tenants had a strong sense of community belonging  Poorer feelings of safety (i.e., feeling less safe in one’s neighbourhood) were associated with higher levels of depression, but a greater sense of community can buffer this relationship |
| Gusmano et al. (2018)  New York, USA  Affordable apartment buildings (30% RGI) | Retrospective analysis of medicare data from 2014 comparing buildings with and without **Self Help**  **Selfhelp Active Services for Aging Model**  Strengthen ties between tenants and social workers that make referrals to community programs | Access to Services  Physical Health | **Buildings** (n=6)   * None   **Tenants** (n=17,195)   * 1,248 received SelfHelp * 15,947 control buildings | Hospital discharge rate was 32% lower among intervention versus comparison group.  Hospital length of stay was one day shorter among intervention versus comparison group.  Rate of hospital discharges for ambulatory care-sensitive conditions was 30% lower in the intervention versus comparison group. The odds of being discharged were 43% lower among the intervention versus comparison group. |
| Harel & Harel (1978)  Ohio, USA  Public housing facility managed by LHA | Longitudinal outcome evaluation of on-site services (4 years)  **Cedar Coordinated Services for Seniors -** An inter-agency, multi-service coordination program | Access to Services  Sociodemographic  Physical Health | **Buildings** (n=unknown)   * One high-rise building and a mix of low-rise buildings * Mix of age-segregated and age-integrated buildings   **Tenants** (n=330)  Age segregated buildings (n=150):   * Average age: 75.5 years * Monthly income: $132.10 * Average length of tenancy: 6.1 years   Age integrated buildings (n=130):   * Average age: 74.6 * Monthly income: $123.10 * Average length of tenancy: 7.8 years | During the 4 years, a higher percentage of age segregated buildings moved away or were institutionalized (26% and 9% respectively), compared to age-integrated buildings (15% and 2% respectively), but those in age-integrated buildings were more likely to die (21% versus 10%).  In year 4, age-segregated buildings had significantly higher rates of service utilization for nursing (64% versus 31%), social work (43% versus 22%), outreach (45% versus 23%), but not home aids (38% versus 31%). |
| Harel et al. (1983)  Ohio, USA  Public housing projects managed by LHA | Cross-sectional structured interviews examining socio demographic factors & morale | Unit Condition  Sociodemographic  Physical Health  Mental Health  Social Health | **Buildings** (n=unknown)   * Ranged from 29-639 units * Predominantly 1-bedroom apartments   **Tenants** (n=427)   * Majority female * 33% over age 75 * 89% lived alone * 56% were non-white * 48% had an unskilled occupational background * 70% rated health as fair, poor or very poor * Length of tenancy ranged from less than 1 year (15%), 1-2 years (36%), 3-5 years (30%) and over 6 years (19%) | Black tenants had more limited financial resources, fewer years of education, lower occupational status, lower perceived income adequacy, and poorer health status.  Strongest predictor of morale was environmental preference and quality, health and functional status, income adequacy, and social integration. Black tenants had higher morale than white tenants. |
| Harris et al. (2000)  Massachusetts, USA  Subsidized housing managed by LHA | Cross-sectional survey of Vitamin D levels | Sociodemographic  Physical Health  Food Security | **Buildings** (n=14)   * None   **Tenants** (n=246)   * 65.9% female * 58.1% had less than high school education * 44.7% white * 25.2% walk outside 0 days per week | 32.5% had low vitamin D intake and 35% had low calcium intake.  63% did not take a vitamin D supplement, and 79.7% did not take a calcium supplement.  A greater proportion of black tenants (21%) had a vitamin D deficiency compared to white tenants (11%).  Vitamin D supplements were likely to be taken among white tenants (44% versus 24%) and among women (74.7% versus 52.4%). |
| Heumann (1988)  Illinois, USA  Subsidized rental housing for seniors (Section 8, Section 202 and Section 236) managed by LHA | Cross-sectional survey of public housing site managers supporting frail elderly | Housing Policy  Housing Staff | **Buildings** (n=304)   * Newly built facilities in 25 counties * 45,386 units * Buildings ranged in size from 35 to 296 units (majority between 90 and 200 units) * Building staff typically consisted of: building manager, two maintenance staff, and a fourth floating position for extra office or maintenance staff.   **Tenants** (Not applicable)   * Average length of tenancy: 5.4 years | The average site manager was female, mid-40’s, had a college degree, and had been in the role for 4.7 years (shorter than the average length of tenancy). Most managed one facility full-time.  Dimensions of management activities included: basic physical maintenance and administrative duties (e.g., rent reviews), tenant interactions (e.g., taking complaints), and tenant support activities (e.g., assisting with housekeeping, managing tenant councils).  19% of managers reported a strong social and support emphasis within their management activities. However, most managers appeared to be hired for their skills in managing the physical and fiscal property.  Most managers were unable to determine how many tenants had difficulties with ADLs and IADLs, even though they viewed themselves as a major actor likely to make arrangements when a tenant needed support with those tasks.  Two-thirds of sites have an independent living clause in their lease, but only 11% of managers used that clause to evict tenants. Managers were unprepared to locate transfer sites for ill-suited tenants and were not able to provide adequate support during the transfer. |
| Heumann (1996)  Illinois, USA  Housing facility for seniors managed by LHA | Longitudinal survey of housing satisfaction  (3 years)  **Age Mixing** - moving young adults with chronic mental illness and substance abuse histories into the seniors’ | Housing Policy  Housing Staff  Access to Services  Tenant Governance  Housing Satisfaction  Safety & Security  Social Health | **Buildings** (n=1)   * Runs a Congregate Care Program to provide assisted living options for seniors * LHA provided a site manager program manager, and transportation, but other services including social work, congregate meals, and homemaking were provided by for-profit and non-profit community agencies   **Tenants** (n=145)   * Characteristics unknown * Feedback from n=80 in year 1; n=49 in year 2; and n=43 in year 3. | The proportion of younger residents increased from 32.8% in Year 1 to 47% in Year 3.  Senior’s disapproval with the mixing of age groups rose from 41.7% to 64.5% over three years. Additionally, 19.6% no longer wanted to live there after three years (compared to 2.8% after year 1).  By the end of three years, seniors were more likely to report difficulty socializing and connecting with friends in the building, and there was a significant increase in the proportion of seniors not using the recreation programs.  Seniors felt less safe in their building after 3 years. Staff reported several safety incidents that occurred in common spaces and felt that seniors were too scared to participate in activities as a result.  Overall satisfaction with housing significantly decreased over the three years, and seniors were less likely to recommend the building.  Property managers felt younger tenants reduced vacancies and supported a more consistent rental income stream, but that screening for compatible tenants was time consuming.  Housing staff experienced increased burnout and reported that time spent managing the physical building decreased over the 3 years due to increased tenant-focused demands.  Senior tenants were significantly more likely to report that the site manager was inefficient, unfriendly, unresponsive and unavailable after 3 years. |
| Hiner et al. (1987)  Indiana, USA  Public housing apartment managed by LHA | Cross-sectional survey of health and quality of life by living Arrangements | Access to Services  Unit Condition  Sociodemographic  Mental Health  Social Health  Physical Function & Mobility | **Buildings** (n=1)   * Home to 257 residents * 1-bedroom apartments * On-site health centre with physicians, nurses, hospital clerks, two exam rooms and a laboratory   **Tenants** (n=257)   * 65.8% female * Average age: 75.5 years * Average education: 8.8 years * 52.7% black * Of those who lived alone, 60.2% were widowed * Average length of tenancy: 6.9 years; 35% had lived in the building for 10+ years   Survey responses by n=146 | Those who lived alone (84.3%) were more likely to be female and had a shorter tenure in the building (6.4 years versus 9.8 years).  Those who lived alone reported better health and had a greater ability to perform activities of daily living.  Those who lived alone scored higher on two quality of life domains: use of time, and social interactions, but experienced more loneliness. |
| Hollar et al. (2017)  Florida, USA  Subsidized low-income multi-unit housing | Pre/post survey  (1 year)  **Smoke-free Policy**  - Prohibitions to smoking within one’s apartment, hallway, indoor common areas and outdoor common areas, excluding the designated smoking area | Housing Policy  Sociodemographic  Physical Health | **Buildings** (n=15)   * Multi-unit properties   **Tenants** (n=960)   * 80.7% female * Avera age: 77.9 * 78.8% white * 61.7% primarily spoke Spanish * 37.9% had less than high school * 92.2% were non-smokers | To implement the policy, a “smoke free housing seminar” was organized to educate property owners about the costs and benefits of implementing smoke-free policies.  The policy was added as an addendum to the lease for current and future tenants and was added to the “House Rules.”  Significant reduction in exposure to second-hand smoke over the one-year period (from 31.1% to 23.6%).  Tenants whose primary language was English and tenants who indicated they were not comfortable confronting people violating the smoke-free policy were more likely to report exposure to second-hand smoke. |
| Howland et al. (1998)  Massachusetts, USA  Public housing development for seniors managed by LHA | Cross-sectional survey of falls history and physical functioning | **Micro:**  Sociodemographic  Physical Health  Social Health  Physical Function  & Mobility | **Buildings** (n=6)   * None given   **Tenants** (n=266)   * 77% female * Average age: 76.3 years * Average education: 10.5 years * 97% white * 87% lived alone * 36% use a walking aid * 29% experienced dizziness, 26% had vision problems, and 11% had a stroke * 56% completely rely on others for social support | 17% had fallen within past three months.  35% had a serious fall in the past five years that required medical attention.  54.9% had a fear of falling but this was not related to activity restriction. |
| Jacobs (1969)  Massachusetts, USA  Public housing building managed by LHA | Observational qualitative study following 50 tenants | Housing Policy  Tenant Governance  Unit Condition  Sociodemographic | **Buildings** (n=5)   * 40 units total across 5 buildings (two stories each) * Eligible tenants must be over 65 and have an income less than $2,500 * Minimum rent is $50 and includes heat, water and gas * Unit includes kitchen, bedroom, closet, bathroom and porch. * Laundry is shared in the building.   **Tenants** (n=50)   * 80% female * Average age: 76 years * Most were widowed * 100% retired | Housing authority selected residents from a list of applicants based on need, long residence in town, priority of application, and suitability of tenant.  Project manager tended to house tenants of similar ethnic backgrounds in close proximity to each other.  Tenants created **Friendship Club**, an organization to foster connection, but also put pressure on the housing authority for various benefits.  Friction in the Friendship Club revolves around power within tenants. |
| Jang et al. (2011)  Florida, USA  Public housing managed by LHA | Cross-sectional survey of attitudes towards mental health services | Sociodemographic  Mental Health | **Buildings** (n=unknown)   * Not given   **Tenants** (n=297)   * 73.1% female * Average age: 76 * 64.3% were Cuban * 20% had more than high school education * 20% were married * 43% had probable depression | 51% felt that depression was a normal part of aging, and 35% thought depression was a sign of personal weakness.  62% felt that antidepressants were addictive, and 17% felt counselling brought up too many bad feelings.  Negative attitudes towards mental health services were predicted by older age, believing that depression would make family disappointed in them, and believing that counselling brings up bad feelings. |
| Johnson & Mullins (1989)  Florida, USA  Public housing managed HUD (Section 236/ Section 8) | Cross-sectional structured interview of social isolation and loneliness | Housing Policy  Sociodemographic  Social Health | **Buildings** (n=1)   * Built in 1971 * No community dining areas, no on-site medical staff, and no meals are provided * To be eligible, tenants must be ambulatory and able to carry out instrumental activities of daily living.   **Tenants** (n=131)   * 76% female * Average age: 76 years * 67% had lived in facility for 3+ years * 27% were dissatisfied with their health | 57% of tenants had low loneliness while 11% had high loneliness.  Around half tenants had no children, siblings or grandchildren. Among those with family relationships, contact with family was less frequent than with neighbours and friends. |
| Jonas, K. (1979)  Wisconsin, USA  Public housing for the elderly managed by LHA | Cross-sectional survey of health and social situation, including kin relationships and community involvement | Social Health | **Buildings** (n=6)   * None given   **Tenants** (n=414)   * None given | 60% had contact with children, while only 44% had contact with siblings. Only 20% of tenants had contact with both groups.  50% had at least one close friend in the building, compared to 30% had friends but only outside the building and 20% had no friends at all. Those with friends outside the building were more likely to have friends inside.  61% of those with both types of kin had friends in the building, compared to 37% of those with no kin relationships having friends inside.  Tenants who were married were more likely to have close friends; however, these friends were less likely to live inside the building.  Women were more likely to have close friends and twice as likely to have friends in the building. |
| Kahana et al. (1977)  Michigan, USA  Subsidized public housing managed by LHA | Cross-sectional survey of ageism experiences by housing type:   * Subsidized housing * Community housing with supports | Safety & Security  Sociodemographic  Physical Health | **Buildings** (n=unknown)   * None given   **Tenants** (n=100 in public housing)   * 69% female * Average age: 76 years * 80% lived alone * 75% widowed * 80% had fair/poor/very poor health | 56% reported having a problem with their neighbourhood, including problems with teenagers (48%), crises such as fires (40%), undesirable neighbours (37%) and crime on the streets (26%).  Tenants in subsidized housing felt more vulnerable to neighbourhood problems than community residents. |
| Kim & Kim (2017)  Seoul, South Korea  Public rental housing operated by the municipal government | Cross-sectional survey of social networks | Access to Services  Unit Condition  Social Health | **Buildings** (n=7)   * Clustered into 1 complex * 1,807 units across all 7 buildings * Average unit size ranges from 25.2m2 to 39.6m2. * Common facilities include offices, stores, senior centres, and security. * 52.4% of tenants in complex lived there for more than 20 years   **Tenants** (n=488)   * Average age: 70.6 years | Preferred meeting places for tenants were individual units (33.7%) and corridors/elevators (27.2%)  Senior tenants had strong social networks, with strong ties to neighbours and frequently serve as an intermediary to other neighbours. |
| Klinedinst (2005)  Pennsylvania, USA  Government subsidized independent living apartment | Needs assessment and pre/post evaluation  **Eat and Learn Nutrition** – nutrition education program with hot lunches (3 sessions) | Access to Services  Sociodemographic  Physical Health  Social Health  Food Security | **Buildings** (n=1)   * High rise building with 200 units * A common room with on-site kitchen * Management provided weekly free shuttle service to the supermarket   **Tenants** (n=25)   * 84% female * Average age: 75 years * 40% white; 48% black * 24% rated health as fair or poor * 48% lived in building for 5+ years | All tenants reported doing most of their own cooking, but 28% felt they did not eat enough fruit and vegetables, and 24% reported eating fast food at least twice per week.  Program was successful at increasing tenant knowledge of diabetes, salt intake, and fat and cholesterol.  Program participants stayed after the program to drink coffee and talk with their friends. |
| Kweon et al. (1998)  Illinois, USA  Public housing managed by LHA | Cross-sectional structured interviews examining use of outdoor common spaces, social integration and sense of community | Sociodemographic  Social Health | **Buildings** (n=11)   * All age-integrated buildings with 16 stories * 11 had common outdoor space * All first floors converted into offices   **Tenants** (n=91)   * 88% female * Average age: 68.7 years * 58% were widowed * 87.9% black * Length of tenancy ranged from 11.3 years to 22.9 years across the 11 buildings | Tenants reported knowing an average of 3.5 neighbours well enough to visit and could rely on an average of 3 neighbours in times of emergency.  Spending time in shared green outdoor spaces was linked to stronger social connections to neighbours in the building and a greater sense of local community. |
| Larkin et al. (2017)  Public Housing and Section 8 managed by the LHA | Cross-sectional survey of adverse childhood events | Sociodemographic  Mental Health  Substance Use | **Buildings** (n=unknown)   * LHA managed over 2,000 subsidized units   **Tenants** (n=49)   * 88% female65% female * Average age: 69.4 years * 16% black * 74% retired * Average income: $1228.11USD/month * 61% never owned own home * 18% had experienced homelessness * 26% had history of substance abuse * 22% had mild anxiety, 10% moderate anxiety, and 2% severe anxiety | One third had experienced 1-3 adverse childhood experiences, and 31% had experienced four or more.  Those with more adverse childhood experiences were more likely to experience substance abuse.  Over half of tenants with four or more adverse childhood experiences reported lifetime substance abuse, compared to only 10% of tenants with less than four adverse childhood experiences. |
| Lawton & Hoffman (1984)  Pennsylvania and New Jersey, USA  Section 8 (n=2) and Section 202 (n=3) public housing for seniors | Qualitative interviews with neighbours (n=206) and shopkeepers (n=57) around the apartments | Access to Services | **Buildings** (n=5)   * Initially occupied between 1966 and 1968 * Ranged from 140 to 390 units * One section 202 building had on-site meals included with monthly rent   **Tenants** (not applicable) | Half of shopkeepers and two-thirds of neighbours had been inside one of the buildings.  40% of neighbours talked with tenants once a week, and 31% had helped a tenant during the past year.  Shopkeepers indicated tenants represented 5% of their customers, and they frequently directed special sales towards them.  Neighbours and shopkeepers did not feel the presence of seniors housing was negatively impacting the community. |
| Lawton et al. (1985)  Pennsylvania and New Jersey, USA  Section 8 (n=2) and Section 202 (n=3) public housing for seniors | Longitudinal cohort study (12-14 years) of tenants after initial occupancy | Access to Services  Sociodemographic  Social Health  Physical Function & Mobility | **Buildings** (n=5)   * Initially occupied between 1966 and 1968 * Ranged from 140 to 390 units * One section 202 building had on-site meals included with monthly rent   **Tenants** (n=665)   * Average age: 77.7 years * 7.9% married * 9% drove a car * 58% leave the neighbourhood at least once per week * 21% were unable to complete shopping independently * 12% were unable to complete housework independently | Since initial building occupancy, average age of tenants increased by 4.9 years, and the proportion tenants married decreased from 25.2% (1966-1968) to 7.9% (1980).  Over the 12-14 years, there was a general decline in health (more IADL difficulties, more hospital days), social function (fewer friends in the building) and community mobility (fewer trips into community) among tenants.  There was an absence of community services when the housing was new, but all buildings had between 3 and 5 agencies providing on-site health and community services in 1980;  Service provision was found to be uncoordinated and unplanned and was described as “patchwork.” |
| Lawton & Nahemow (1979)  Pennsylvania, USA  Public and Section 202 housing for seniors | Cross-sectional survey of tenants comparing section 202 (development subsidy) and public housing (rental subsidy) tenants on social health | Unit Condition  Sociodemographic    Social Health | **Buildings** (n=152)   * None given   **Tenants** (n=2,431)   * Average age: 74.7 years * 80% women * 16% married * 21% black * 23% were on public assistance * All lived in the building for at least 4 years | Compared to section 202 tenants, public housing tenants had lower activity participation, fewer friendship behaviours, but higher housing satisfaction.  Family contact and morale not related to housing type. |
| Lawton et al. (1975)  Multiple sites, USA  Public and Section 202 housing for seniors | Cross-sectional survey of building, neighbourhood, and tenant characteristics | Unit Condition  Social Health | **Buildings** (n=154)   * Section 202 housing managed by non-profit housing provider * All had units specially designed for seniors, but half of the buildings had mixed ages   **Tenants** (n=2,457)   * Average age: 74.7 years | Housing managed by non-profit providers was associated with higher friendship scores and more activity participation among senior tenants.  Senior tenants in smaller communities had higher friendship scores, greater housing satisfaction, and greater activity participation.  Bigger building size was associated with lower housing satisfaction, and lower motility; these associations did not remain when building size was a function the number of units specifically designated for seniors. |
| Lawton & Yaffe (1980)  Multi-sites, USA  Public housing managed by LHA and HUD | Cross-sectional survey of victimization and wellbeing | Access to Services  Safety & Security  Sociodemographic | **Buildings** (n=52)   * All had units designated for the elderly * Mix of high-, mid- and low-rise apartments, garden apartments and semi-detached units * Ranged in size from 10 to 400 units per building * Some were age-segregated, and some were mixed buildings   **Tenants** (n=662)   * 80% women * Average age: 75.3 years * 15% married and lived with spouse * 64% white * 46% lived in in age-segregated buildings * Average length of tenancy: 7.2 years | All units had housekeeping, public spaces, and some on-site activities; only minority of buildings had additional on-site services.  7.6% reported being victimized in past 12 months, and 13.8% within the past 3 years.  69% do not leave their unit after dark.  Fear of crime was central to wellbeing, and reduced housing satisfaction, neighbourhood satisfaction, and morale.  Fear of crime was higher in age-integrated buildings, high crime areas, larger communities, and among seniors who had been victimized. |
| Lee (2009)  Hong Kong, China  Government subsidized rental housing | Cross-sectional structured interviews about successful aging with senior tenants who lived alone | Unit Condition  Sociodemographic  Physical Health | **Buildings** (n=2)   * Contains dedicated section for seniors aged 60+, with priority for those living alone   **Tenants** (n=109)   * 75.2% female * Average age: 77.9 years * 74.1% had no formal education * 68.8% widowed; 5.5% married * 73.4% received government aid * 77% had fair/poor/very poor health * Average of 3 chronic illnesses | 63.3% were very satisfied with their living environment, and 11% were dissatisfied.  46.8% of senior tenants felt their aging had been successful, and 39.4% felt they were unsuccessful. Successful aging predicted by being female, and having higher life satisfaction, higher satisfaction with living environment, having non-government financial resources, and higher self-reported health. |
| Lipman & Marden (1966)  Florida, USA  Public housing managed by LHA | Cross-sectional survey of end-of-life preparations | Housing Policy  Sociodemographic  Social Health | **Buildings** (n=4)   * Tenants must be physically autonomous and earn less than $2,800 per year   **Tenants** (n=119)   * 79.8% female * Median age: 75 * 79.8% widowed * 49.6% black * 58.8% belonged to no community organizations * Median income: $70 per month * 58.8% had less than 6th grade education | 67.2% had made some provisions for end of life; 32.8% had made no provisions.  Most common end-of-life provisions were private money for final expenses (41%) and arrangements for a grave or cremation (13%). Only 2% had a will.  Black tenants, those on social welfare, and those with less education were more likely to have no end-of-life provisions. |
| Lipsitz et al. (2019)    Massachusetts, USA  Public housing (Section 8) managed by HUD | (Cluster RCT  (1 year)  **MiWish Tai Chi**  - Tai Chi classes twice per week for 1 year - At home 20-minute practice for the three non-class days | Access to Services  Sociodemographic  Physical Health  Mental Health  Physical Function & Mobility | **Buildings** (n=15)   * None given   **Tenants** (n=180)   * 66.7% female * Average age: 75.3 years * 32.2% black * 47.5% previous fall * Common chronic conditions: high blood pressure (67%), vision problems (57.6%), high cholesterol (53.2%), osteoarthritis (48.6%), diabetes (33%), ulcers (31.5%), cancer (22.8%) * Average # health problems: 5.1 * 33.3% had depression | No difference in any clinical, functional, cognitive, or affective outcome measures between health education and tai chi groups at 6- or 12-month follow-up.  Tai Chi had lower average attendance compared to health education at 6 months (68% vs 78%) and 12 months (75% and 64%). |
| Lo et al. (2018)  Massachusetts, USA  Public housing (Section 8) managed by HUD | Focus groups with participants from **MiWish Tai Chi** RCT, randomized to Tai Chi | Access to Services  Physical Health  Social Health  Physical Function & Mobility | **Buildings** (n=4)   * None given   **Tenants** (n=41)   * Average age: 78.3 years * 68.3% female * 82.% white | Average adherence rate was 64.3%; 30 participants had high adherence (>50% of classes) and 8 had low adherence (<50%); 3 people withdrew from study.  Main factor that lead to higher attendance included providing the program in the building at no cost.  Tenants with high adherence reported high levels of social support from instructors and peers in the program.  Tenants reported the program reduced fears of falls and improved confidence, energy levels, self-efficacy, physical and psychological well-being. |
| Lucio & McFadden (2017)  Arizona, USA  Public housing owned by municipality with different property management processes | Multi-site case study approach to understand housing management practices, with interviews, focus groups and observations | Housing Policy  Housing Staff  Tenant Governance | **Buildings** (n=3)   * Building 1 (GS): built in 1978, 112 units, managed by the City with an on-site service coordinator with 24-hour staffing, community gathering space, all subsidized units * Building 2 (FK): built in 2009, 69 units, managed by a private organization, has large multipurpose room with kitchen, mixed-income building * Building 3 (KS): built in 2006, 129 units, managed by a private organization but with a city-funded on-site case manager, no community space outside of the lobby   **Tenants** (not applicable)   * None given | The private housing building management’s focus was on maintaining the physical aspect of the property; however, public housing building management had a focus on maintaining the independence and functionality of their tenants, with hybrid building placing someplace in the middle.  Private housing a top-down approach with a lack of tenant empowerment. A lack of accessible management results in poor tenant input and support for residents in organizing events, leading to tenant isolation.  In public housing, management made most decisions, but encouraged tenants to share input on issues through tenant councils (supervised by staff). Highly involved management in tenant organizations lead tenants to be dependent on management for formal support rather than on other tenants.  Hybrid site implement bottom-up approach for higher tenant influence and involvement in service delivery and operation. Tenants felt empowered and part of the community but not all tenants trusted management to translate their needs properly. The implementation of **resident activity director** created community-like environment for formal tenant support; however, this staff lacked formal training due to its informal nature of supporting tenants to age-in-place. |
| MacFarlane & Tonks (1992)  Nova Scotia, Canada  RGI Public Housing | Cross-sectional survey of medication use | Sociodemographic  Physical Health | **Buildings** (n=unknown)   * None given   **Tenants** (n=24)   * 70.8% female * Average age: 73.1 years * 66.7 reported fair or poor health | Tenants had an average of 6.7 prescription medications.  50% had difficulty reading the prescription label, and 67% had difficulty reading the warning labels. |
| Marks et al. (1987)  California, USA  Subsidized housing projects for the elderly | Cross-sectional survey of health behaviours | Housing Policy  Access to Services  Sociodemographic | **Buildings** (n=17)   * All tenants must have demonstrated ability to care for themselves   **Tenants** (n=603)   * 100% women * Median age: 71 years * 50% widowed; 18% married * Average annual income: $5,772 * Average education: 6 years * 23% previously homemakers with no outside employment | 91% had health insurance (including Medicare)  62% had a physical examination in the past year.  In the past year, 39% had been to a dentist, 32% to a podiatrist, 31% to a social worker, and 19% to a gynecologist |
| Maynard (1990)  Florida, USA  Seniors’ public housing buildings | Cross-sectional survey of health beliefs by housing type:  - Public Housing  - Retirement Community | Sociodemographic  Physical Health | **Buildings** (n=3)   * None given   **Tenants** (n=33)   * 84.4% female * Average age: 69 * 69% less than 9th grade education * 100% Black * 81.2% annual income less than $5,000 * 57.5% rated health as poor to fair | 86% of public housing seniors saw their doctor at least every 6 months, and 88% had concerns about their health.  Retirement community residents were more likely to report good health (88% versus 42.5% in public housing) and only had medical checkups when there was a need.  Public housing tenants were more likely to report spending zero hours per day doing exercise and leisure (12% versus 0%). |
| McAuley & Offerle (1983)  Virginia, USA  Rent-subsidized housing projects | Cross-sectional survey of housing satisfaction and life satisfaction | Housing Staff  Unit Condition  Sociodemographic  Physical Function & Mobility | **Buildings** (n=2)   * High-rise buildings * Both initially occupied within 18 months of the study start date   **Tenants** (n=132)   * 79% female * Over half were over age 70 * 78% white * 75% lived alone * 50% widowed * Over half had annual incomes less than $4,000 * 28% had health problems which were limiting activities | Among tenants who left the building less often, suitability of the units (e.g., perceptions of storage, housekeeping, etc.), perceptions of buildings (e.g., e.g., satisfaction with building features such as lobby, laundry, common spaces) and perceptions of management (e.g., responsiveness, friendliness) were positively linked to life satisfaction.  For tenants who regularly left the building, there was no link between residential suitability and life satisfaction. |
| McCunn & Gifford (2014)  British Columbia, Canada  Subsidized housing managed by non-profit housing provider | Cross-sectional survey comparing ease of use in the unit among those with and without accessibility features | Unit Condition  Sociodemographic | **Buildings** (n=19)   * None given   **Tenants** (n=100)   * 72% female * Average age: 75 * 47 lived in accessible units; 53 lived in non-accessible units * Average length of tenancy: 3 years | Very few differences in satisfaction with the bathroom, kitchen, and bedroom were noted between accessible and non-accessible units.  13% of tenants in non-accessible units expressed concerns of the unit’s ability to accommodate their needs in the future. |
| Messer (1967)  Illinois, USA  Public housing for the elderly managed by LHA | Cross-sectional survey of social participation and morale | Mental Health | **Buildings** (n=unknown)   * Mix of age-segregated and mixed age buildings   **Tenants** (n=243)   * Median age: 71 | A greater proportion of tenants in the age-segregated buildings had high social interactions and high morale, compared to tenants in mixed age buildings. |
| Morris (2012)  Australia  Subsidized public housing (RGI 25%) | Semi-structured interviews with older renters in market rental and subsidized rental units | Sociodemographic  Social Health | **Buildings** (n=unknown)   * None given   **Tenants** (n=38)   * Average age: 73.8 years * 73.7% female * 63.5% widowed * Average length of tenancy: 17.8 years | Public housing tenants had greater social ties and activities than market renters.  Seniors in public housing noted that secure accommodations with low rent that supported their ability to engage in activities. Seniors in market rent units had high rent and anxiety around rental stability, negatively impacting their interest and ability to engage in activities. |
| Morris (2015)  Australia  Subsidized public housing (RGI 25%) | Semi-structured interviews with public housing residents to examine housing tenure, sense of security, and opinions of public housing | Safety  Sociodemographic | **Buildings** (n=unknown)   * None given   **Tenants** (n=24)   * Age ranged from 68 - 81 * 75% female * 29.2% were currently married * 8% had lived in their unit for less than 10 years, 12.5% for 10-15 years, 20.8% for 16-19 years, and 58.3% for 20+ years | Most tenants felt their housing situation had changed in the past decade, as newer tenants moving in were described as “difficult” due to mental health and substance abuse issues that lead to antisocial behaviours, including drug use and dealing vandalism and littering. Tenants believed that if public housing was to accommodate these types of tenants, they were obligated to ensure adequate supports were in place.  The extent to which antisocial behaviours were a feature of everyday experiences varied by apartment. Common areas, in particular, were spaces where many older tenants reported they did not feel safe.  While some tenants had to restrict their activity outside the unit after dark, others reported that they had not had to seriously constrain their social ties or activities in response to antisocial behaviour. |
| Morris & Dexter (1989)  Michigan, USA  Subsidized public housing (RGI 30%) managed by HUD | Operational evaluation of geriatric outreach clinic  **Geriatric Outreach Clinic**  - primary care  - special services (e.g., foot care, immunizations, lab testing)  - health education | Access to Services  Tenant Governance  Safety & Security | **Buildings** (n=3)   * One building has 200 units; the two other buildings have 150 units * Two buildings have active resident organizations, monthly newsletters, and a variety of well-attended building activities * One building has chronic security issues and no tenant participation   **Tenants** (not applicable)   * None given | Clinic staff included a clinical nurse, social worker, and physician.    Clinics opened in three buildings with fixed weekly schedules, serving between 26% and 35% of tenants in the building (for a total of 167 patients). |
| Mullins & Dugan (1990)  Florida, USA  Public housing (Section 8, RGI 30%) | Cross-sectional survey of loneliness and social networks | Sociodemographic  Physical Health  Mental Health  Social Health | **Buildings** (n=10)   * None given   **Tenants** (n=208)   * 83% female * Average age: 76 years * 100% white * 22% had less than high school education * 66% widowed * 37% had fair/poor health | Loneliness and depression were relatively low among tenants.  12% had no children, 12% had no grandchildren, 14% had no siblings, 8% had no friends.  Tenants who had less contact with neighbours and friends and were less satisfied with the level of contact experienced higher levels of loneliness. Relationships with children, grandchildren and siblings had no impact on loneliness. |
| Noelker & Harel (1981)  Ohio, USA  Public housing projects managed by LHA | Cross-sectional survey of psychological wellbeing | Unit Condition  Sociodemographic  Mental Health | **Buildings** (n=12)   * High rise buildings * Ranged in size from 29 to 639 units * Predominantly 1-bedroom units   **Tenants** (n=427)   * 76% female * 51% aged 62-74, 33% aged 75+ * 89% lived alone * 56% non-white * 59% widowed * 70% had fair/poor/very poor health * 10% reported difficulty getting around the building * 30% perceived their neighbourhood to be bad/very bad * 15% lived in the building for less than 1 year, 19% more than 6 years | 60% prefer their current housing site. 40% would prefer to live elsewhere, predominantly in another public housing site (36%) or different geographic location (31%).  Tenants who perceived their unit/building and surrounding neighbourhood more positively, and who preferred to continue living there had higher levels of morale.  Higher morale predicted by housing preference and environmental assessments, knowledge of available resources, self-rated health, religiosity, having someone to check-in on them, number of professionals seen, and number of confidants. |
| Noice & Noice (2009)  Illinois, USA  Subsidized seniors housing complexes | RCT  **Arts Intervention**  - Twice/week, 1-hr classes for 4 weeks  - Given either Acting Exercises or Singing Instruction | Sociodemographic  Social Health  Cognition  Physical Function & Mobility | **Buildings** (n=4)   * None given   **Tenants** (n=122)   * 84.4% female * 68.8% lived alone * Average ranged from: 80.24 to 82.65 by group * Average education ranged from: 12.27 years to 12.78 years by group * Average # close friends ranged from 5.79 to 7.33 by group * 50% used a walker, cane, wheelchair or motorized chair | Tenants in the Theatre Course improved significantly on a battery of 11 cognitive/affective tasks (e.g., word recall, prose comprehension, word generation, digit span, and problem solving) from pre-test to post-test over both the control group and the Music Class. |
| Noonan et al. (2017)  North Carolina, USA  Public housing managed by LHA | Mixed-methods study of health behaviours using a survey (n=88 tenants) and focus groups (n=16 tenants) | HousingStaff  Access to Services  Sociodemographic  Physical Health  Mental Health  Substance Use  Physical Function & Mobility  Food Security | **Buildings** (n=4)   * Nursing students from local university complete clinical placements on-site * Buildings had access to a Resident Opportunities for Self-Sufficiency coordinator   **Tenants** (n=88)   * 62.9% female * Average age: 61 years * 86.9% black * 51.2% windowed/divorced * 64.7% had high school education or less * 41.3% rated health as fair or poor * 60.9% had less than 1 serving of fruit per day, and 59.6% had less than 1 serving of vegetables per day * 23.3% participated no aerobic activities * Common chronic conditions: arthritis (65.8%), high blood pressure (65.1%), diabetes (41.3%) * 38.5% had psychiatric conditions * 44.7% currently drank alcohol | Senior tenants had poorer health behaviours than what is observed in population averages.  Seniors identified intrapersonal factors that supported positive health behaviour change.  The “buddy system” was identified as a key interpersonal factor to promote healthy behaviours.  Access restrictions to the building game room were identified as a barrier to health promotion activities. |
| Normoyle (1987)  Multiple States, USA  Public housing managed by LHA | Cross-sectional survey of safety and fear of crime | Safety & Security  Sociodemographic | **Buildings** (n=42)   * None given   **Tenants** (n=945)   * 75% female * Average age: 71.5 years * 57% black * 20% were from seniors-only buildings; 38% were from buildings where less than 10% of tenants were seniors. * 59% lived in units that were distributed among other units assigned to families; the remaining lived in age-segregated units (e.g., elderly-only buildings, cluster of units for seniors) * 45% lived in complex for 10+ years | 20% reported feeling unsafe or very unsafe in their home.  15% reported they disliked living in their public housing building.  80% judged that crime was a problem for the building; assault, robbery and burglary were major problems for 20%.  10% were victimized in a personal crime and 12% victimized in property crime on the public housing site in the past year.  Older tenants reported feeling safer when a relatively high number of seniors lived in the public housing site; however, when accounting for group size, older tenants in age-segregated housing had higher levels of fear, as they viewed the housing environment as less safe. |
| Park et al. (2019)  Illinois, USA  Subsidized public housing for seniors managed by HUD | Geo-spatial analysis assessing accessibility of health and social services | Access to Services | **Buildings** (n=102)   * Not given   **Tenants** (not applicable)   * Not given | Subsidized housing for seniors was surrounded by 120 health and social service agencies, including 120 primary care centres, 80 libraries, 21 senior centres, and 28 family and support services.  Mental health and behavioural health services focusing on seniors were not located in subsidized housing neighbourhoods.  About two-thirds (65%) had a medium-level of accessibility to services; those with high accessibility were located in the core of the city, while those with low accessibility were located outside the urban core.  Those with medium accessibility levels were more likely to be located in neighbourhoods with high economic disadvantage. |
| Parsons et al. (2011)  USA  Public or subsidized housing complex | Cross-sectional survey of health and wellbeing of seniors in public housing versus community settings.  Data from Health and Retirement Study | Sociodemographic  Physical Health  Mental Health  Physical Function & Mobility | **Buildings** (n=unknown)   * None given   **Tenants** (n=567 public housing)   * 76.6% women * Average age: 73.3 years * 38.4% black; 45.5% white * 83.9% had less than high school education * Median net-worth: $500 * 57.3% had fair/poor health * Common chronic conditions: hypertension (75.2%), arthritis (78.5%), heart conditions (37.5%), diabetes (32.6%) * 32.8% had psychiatric problems * 38.7% had fallen in past two years | Public housing tenants were older and more likely to be women, black and Hispanic.  Those in public housing had lower levels of education and lower net worth.  Public housing tenants were twice as likely to rate their health as fair or poor, compared to seniors who never lived in public housing.  Fatigue, cardiac conditions, stroke, hypertension, diabetes, arthritis, and psychiatric conditions were more prevalent among public housing tenants. |
| Parton et al. (2012a)  New York, USA  Public housing managed by LHA | Cross-sectional survey of senior tenants to create a health profile and compare to community-dwelling seniors in New York City + community consultations on survey results (n=400 stakeholders) | Housing Staff  Access to Services  Tenant Governance  Unit Condition  Safety & Security  Physical Health  Physical Function & Mobility  Food Security | **Buildings** (n=unknown)   * Seniors developments had mostly studio and 1-bedroom apartments * NYCHA has several initiatives to support senior tenants: senior resident advisor programs (at 22 developments), senior centres (n=38), service coordinator programs to navigate government benefits, senior companion programs for socially isolated seniors, and the senior benefit & entitlement fairs.   **Tenants** (n=1,000)   * 29% had a recent fall * 9% reported an accidental burn in the past 3 months * 11% had no access to a doctor, 6% reported not receiving care in the past year, and 11% used the emergency department as a primary source of care. * 13% did not take medications due to cost in the past year * 55% received their annual flu vaccine * 30% had a health care proxy * 20% are food insecure * 22% used transportation services, 20% use homemaking services, and 25% used a congregate meal program * 31% attended a senior centre | Unintentional injuries were higher among public tenant seniors compared to community-dwelling seniors, including more falls, and higher rates of accidental burns.  Access to health care was lower among public housing tenants compared to community-dwelling seniors, including no primary care physician. They were also less likely to engage in end-of-life planning.  Despite needing community services, only 55% reported accessing them; those connected to a senior centre were more likely to utilize community support services.  Key feedback from stakeholders indicated that major issues for seniors included safety and security (especially for those who lived alone, those who were dependent on elevators), crime in buildings, social isolation, the need for retrofitting accessibility equipment, and more support for hoarding and other behavioural health issues.  Stakeholders also felt that seniors needed more information about community resources; many tenant associations have begun using their participatory funds to offer activities for older tenants directly in the buildings. |
| Parton et al. (2012b)  New York, USA  Public housing managed by LHA | Cross-sectional survey of senior tenants to create a health profile and compare to community-dwelling seniors in New York City | Housing Staff  Access to Services  Unit Condition  Sociodemographic  Physical Health  Mental Health  Social Health  Physical Function & Mobility | **Buildings** (n=unknown)   * Seniors developments had mostly studio and 1-bedroom apartments * NYCHA has several initiatives to support senior tenants: senior resident advisor programs (at 22 developments), senior centres (n=38), service coordinator programs to navigate government benefits, senior companion programs for socially isolated seniors, and the senior benefit & entitlement fairs.   **Tenants** (n=1,000)   * 71% female * 55% aged 65-75 * 40% black / 44% Hispanic * 53% lived alone * 29% had at least one ADL limitation and 31% had at least one IADL impairment * Common chronic conditions were hypertension (76%), arthritis (61%), high cholesterol (59%) * 61% had fair or poor health * 19% reported depression, * 30% did not have a friend who could help them if needed; 12% did not have a friend to talk to in the past week, and 9% reported not leaving their home in an average week. * 31% reported no PA in past month * 33% were obese * 15% were current smokers | 83% of older tenants lived in family developments; 13% lived in senior developments, and 3% lived in mixed-family developments.  Compared to national samples of community dwelling seniors, public housing tenants had worse physical health (more ADL impairments, poorer health, more chronic conditions), poorer mental health (increased risk of depression, and more diagnoses of depression) and poorer social health.  Older public housing tenants were more likely to be obese than community-dwelling seniors. They were also more likely to be current smokers. |
| Pater et al. (2014)  Pennsylvania, USA  Public housing (Section 8) managed by LHA | Process and outcome evaluation  **Comprehensive Medication Review program** facilitated by pharmacy students | Sociodemographic  Physical Health  Physical Function & Mobility | **Buildings** (n=15)   * 50 to 110 tenants per building   **Tenants** (n=152)   * 83% female * 42.8% over age 75 * 6% had more than high school education * 93% lived alone * 58.5% reported pain “often” or “always” * 30.3% had fair/poor health * Common chronic conditions: hypertension (81.8%), arthritis (74.2%), depression (44.4%) and diabetes (42.4%). * 39.5% reported fair or poor mobility * 48% used an assistive device * 37.7% reported a hospitalization in the past year and 43.7% reported use of emergency department care | 9% had difficulty managing their prescriptions.  Tenants were prescribed an average of 7.5 medications; 26.9% had at least 10 prescription medications.  Several drug related problems were identified, including unnecessary drug therapy (9.9%), needing additional drug therapy (22.1%), doses too low (9.5%), doses too high (3%) adverse drug reactions (25.5%), and lack of adherence (20.1%).  Many drug-related problems were associated with hospitalizations and poor cognition that impacted adherence.  Among primary care physicians that received the comprehensive medication review documentation, 66% altered medication regimes based on the reported drug-related problems. |
| Pierce et al. (2001)  Connecticut, USA  Subsidized public housing | Cross-sectional survey of nutritional support | Sociodemographic  Physical Health  Social Health | **Buildings** (n=unknown)   * None given   **Tenants** (n=102)   * 100% female * Average age: 82 * 80.4% widowed * 75% had income levels below the poverty line | 94.1% had modified their diet, most commonly low fat (57%), low sodium (40%) and low cholesterol (33%) diets. Those with diet modifications prescribed by their physician were more likely to receive nutritional support.  83.3% had help obtaining groceries, and 67.6% had help acquiring meals. Help most commonly came from friends (46.1%) or adult children (64.7%). |
| Poulin (1984)  Illinois, USA  Subsidized public housing (Section 202/236) | Cross-sectional survey of interpersonal networks by housing type:  - Community dwelling seniors  - Subsidized seniors housing | Sociodemographic  Social Health | **Buildings** (n=2)   * None given   **Tenants** (n=78)   * 84.6% female * 58.4% aged 60 - 74 * 44.9% black * 81.8% had incomes under $5,000 * 59% widowed; 11.5% married | Seniors from the community were more likely to be married and to earn annual incomes over $10,000.  Seniors in subsidized housing had larger and more supportive interpersonal networks but had less contact to their friends compared to seniors living in the community. |
| Rabins et al. (1996)  Maryland, USA  Public housing for the elderly | Cross-sectional survey of psychiatric morbidity | Sociodemographic  Mental Health  Substance Use | **Buildings** (n=6)   * Not receiving any focused psychiatric intervention   **Tenants** (n=945)   * 75.1% female * Average age: 72.5 years * 92.8% Black * 49.3% widowed * 90.7% lived alone * Average education: 8.4 years * 55.2% earn monthly income less than $583 * Average tenancy: 6.9 years (19.7% lived in the building for more than 10 years) | 57.6% of tenants reported at least one lifetime psychiatric disorder, including mood disorders (26.6%), substance use disorders (23.0%), cognitive disorders (10.5%), psychiatric disorders (8%), and anxiety disorders (5.9%).  27.9% had a current psychiatric disorder.  Lifetime psychiatric disorders were highest among males, younger seniors, those earning less than $583 per month, and those who moved into the building less than 5 years ago. |
| Rabins et al. (2000)  Maryland, USA  Public housing for the elderly | Prospective RCT  **PATCH**  - Outreach program with a nurse and psychiatrist providing mental health support  - 7 series 1-hr education program for building staff on senior’s mental health | Access to Services  Sociodemographic  Mental Health | **Buildings** (n=6)   * 3 buildings randomized to intervention and 3 to control   **Tenants** (n=945)   * 75% female * 63.2% over age 70 (Average age: 73.1 years (intervention) and 72 years (control) * 93% black * 9% married; 49% widowed; * 90.7% lived alone * 55.2% earn less than $538/month * Length of tenancy: 11% less than 1 year; 32.5% 1-5 years; 56.5% more than 6 years (average length 6.8 years (intervention) and 7 years (control) | At baseline, there were no differences in prevalence of psychiatric conditions between intervention (29%) and control (24%) buildings.  Nurse most commonly provided counselling (65.6%), education (36.5%), liaison with on-site social worker (25.5%), and supervised medication compliance (22.1%) during in-home visits.  After 26 months of follow-up, tenants in intervention buildings had significantly reduced psychiatric symptoms and improved mood.  Intervention and control buildings did not differ in the number of tenants who experienced an undesirable move due to eviction or nursing home placement. |
| Riddick (1985)  Maryland, USA  Subsidized public housing complex | Quasi-experimental study of household pets on health  (6 months)  **Fish Aquarium**  - Aquarium group that maintained a fish tank  - Visiting group that visited the fish tank  - Control group | Access to Services  Physical Health  Mental Health  Social Health | **Buildings** (n=1)   * Senior centre co-located in building * Congregate meal program offered five times per week   **Tenants** (n=22)   * 77.3% female | Following the intervention, the aquarium group experienced a decrease in blood pressure, and were more relaxed compared to the visitor and control groups.  The visitor group reported decreased loneliness over the 6 months. |
| Robbins et al. (2000)  Maryland, USA  Public housing for the elderly | Process evaluation of a **Psychiatric Assessment and Treatment in City Housing**  **PATCH**  - Outreach program with a nurse and psychiatrist providing mental health support  - 7 series 1-hr education program for building staff on senior’s mental health | Housing Staff  Access to Services  Sociodemographic  Mental Health  Substance Use  Cognition  Physical Function & Mobility | **Buildings** (n=unknown)   * PATCH implemented into multiple buildings over the 9-year period * Had a building manager   **Tenants** (n=97)   * 78.4% female * 50.5% over age 75 * 74.2% Black * 92.8% lived alone * 42.4% less than 9 years education * 42.3% annual income < $5,000 * Common chronic conditions: hypertension (32%), arthritis (24.7%), diabetes (16.5%) * Common ADL/IADL impairments: shopping (56.7%), cleaning (46.4%), meals (41.2%), bathing (20.1%) and dressing (10.3%). * 45.5% used a mobility device * Most prevalent psychiatric disorders were dementia (30.9%), depression (26.8%), and alcohol misuse (18.6%). | To implement PATCH in the building, program staff had to attend Tenant Council meetings, and meet with building manager.  PATCH was rolled out into 17 buildings; approximately 11% of tenants in the buildings participated in PATCH.  Referrals for PATCH come from building social services counselor (47.4%), housing manager (13.4%), and assisted living worker (11.3%).  Most common reason for referral was depression (36.1%), memory problems (29.9%) and paranoia (17.5%). |
| Robison et al. (2009)  Connecticut, USA  Government subsidized public housing for seniors | Cross-sectional structured interviews with senior tenants on mental health | Housing Staff  Tenant Governance  Sociodemographic  Mental Health  Substance Use | **Buildings** (n=13)   * Each building has a tenant association and on-site building staff   **Tenants** (n=635)   * Average age: 69.8% years * 37% Black, 42% Puerto Rican * 30% widowed; 15% married * 74% with monthly incomes less than $70 * Lived in building for average of 6.3 years | 26% had major depressive disorder; 12% had generalized anxiety disorder; 13% had suicidal ideation, 8% were current drug users, 23% consumed alcohol. Prevalence of mental health disorders varied by ethnicity and sex, with Latina women being most likely to report challenges.  20% were currently receiving treatment for mental health, and 18% had received it in the past.  For both ethnic groups, younger age, more chronic conditions, and social distress were related to major depressive disorders.  Environmental stress, shorter tenure in the building, poorer perceived health, higher life stress and fewer leisure activities predicted depression in Latino’s only. |
| Sanders et al. (2010)  Washington DC, USA  Subsidized housing (Section 202 and Section 236) managed by HUD | Development and evaluation of a Family Caregiving program  **Family Caregiver Program**  - education program on *understanding aging in place* and *helping my resident age in place.* | Housing Staff  Physical Health  Social Health  Physical Function & Mobility | **Buildings** (n=3)   * Buildings ranged in size from 140-250 units * All buildings had one service coordinator   **Tenants** (n=249)   * Common chronic conditions: high blood pressure (64.5%), arthritis (51%), heart problems (29.6%), and diabetes (26%) * 48.5% had 3 or more health conditions * 33.5% had at least one ADL limitation, and 5.16% had at least one IADL limitation * 47.6% called their family daily, and 42.2% visited their family weekly * 28.2% received limited to no assistance from family, and 24.5% received a high level of assistance. * Most family assistance was for transportation (53.4%), shopping (48.8%), companionship (37.4%), arranging medical care (33%), and finances (33%) * Average length of time in tenancy ranged from 4.5 years to 7.2 years across buildings | Service coordinators felt that family members were often in denial about changes in functioning, had limited knowledge about available services, and needed more training on the aging process.  Family caregivers generally had positive feelings about their caregiver role.  Two-thirds of family caregivers felt it was the role of the housing provider to tell them about services that might help their family member.  Majority of family caregivers (62%) did not ever approach the service coordinator for support.  Service coordinators were uncomfortable facilitating the program due to lack of knowledge and experience.    Following the program, family caregivers reported feeling well prepared or very well prepared to support their family member. |
| Schneider et al. (2014)  New York, USA  Public housing managed by LHA | Cross-sectional telephone interviews on senior centre participation | Tenant Governance  Sociodemographic  Physical Health  Physical Function & Mobility | **Buildings** (n=unknown)   * Seniors buildings have access to case management and “floor captains” * Family buildings have less than 25% of residents over age 60 * Mixed buildings have between 25% and 50% of residents over age 60   **Tenants** (n=1000)   * 70% female * 44% aged 75+ * 53.6% lived alone * 41.8% Black; 43.6% Hispanic * 61.2% rated health as fair/poor * 28.5% had > 1 ADL impairment * 73.7% had lived in public housing for 15+ years | 73.9% lived in family housing; 12.3% lived in mixed housing, and 13.8% lived in seniors housing.  31% attended a senior centre in past three months.  Living in a seniors or mixed building were positive predictors of senior centre participation |
| Schulman (1996)  Multiple states, USA  Public housing (Section 202/208) Section 202/208 managed by National Council of Senior Citizens Housing Management Corporations | Process and outcome evaluation of a service coordinator program  **Service Coordinator** provided casework with frail elderly to identify tenants with needs, arrange for support services, monitor service quality, and reassess as needed. | Housing Staff  Access to Services | **Buildings** (n=20)   * None given   **Tenants** (n=458)   * 73.8% female | Prior to the program, support services were inefficient and haphazardly provided.  Goal was to enhance quality of live and prevent unnecessary or premature institutionalization.  Service coordinators must have a “big heart”, education in gerontology, and experience networking and working with seniors.  Once a case was opened, it was not closed until the tenant moved or died. Services could be terminated if no longer needed, but the program required ongoing needs assessment.  Assessments followed a medical model (i.e., needs), a consumer model (i.e., market services), or were interactive co-assessments with engagement from tenants.  Tenants had some fears about service coordinator, including concerns about service costs, rising rent, or eviction.  Tenants served increased from 1,454 in 1993 (with 106,063 hours of service), to 1,903 in 1994 (with 296,022 hours of service).  Services offered included: housekeeping, meals, transportation, personal care, counseling, information, and entitlement program application support.  Most tenants found the SC accessible (99%), knowledgeable (100%), and readily available (84.7%). Tenants used the SC to provide companionship (85.8%) and provided a sense of security (99.5%). |
| Seo & Mazumdar (2011)  California, USA  RGI units managed by local public housing authority | Naturalistic field research study with observation and interviews | Unit Conditions | **Buildings** (n=1)   * 30% of household income paid in rent * 3-story “E-Shaped” building * 53 single-room apartments, each with a bathroom, bedroom, living room and kitchen * Each unit was approximately 582 square feet * Apartments only rented to people aged 62+   **Tenants** (n=65)   * 100% Korean immigrants | Tenants discussed shifting roles in multigenerational households; many had lived with adult children until moving into their smaller apartment, which often require downsizing belongings.  Tenants felt the design of the unit did not meet their cultural conceptualizations, nor did it facilitate a cultural lifestyle, necessitating modifications to create a sense of home. |
| Sheehan & Wisensale (1991)  Connecticut, USA  Subsidized public housing managed by LHA or HUD | Mixed-methods study of discharge policies through survey of subsidized housing (n=70) and other seniors’ housing (n=18) providers, and follow-up interviews (n=9). | Housing Policy  Housing Staff | **Buildings** (n=unknown)   * Not given   **Tenants** (n=not applicable) | Only 7.9% of subsidized housing managers reported a formal discharge policy, compared to 33% of non-profit and 10% of for-profit housing managers.  The availability of on-site services did not impact the presence of a discharge policy.  Frail tenants with formal or informal in-home supports were frequently allowed to stay in their units, whereas tenants without such support were often asked to move out.  Effective discharge policies should include definitions of frailty, the role of the tenant and their family in the discharge process, and an appeals process.  Housing staff require more training on frailty and how to secure support services for frail tenants. |
| Sheehan & Stelle (1998)  Connecticut, USA  State-subsidized (Section 8) seniors housing managed by LHA | Cross-sectional survey of LHAs on their experiences managing age-integrated buildings (n=52) | Housing Policy  Unit Condition | **Buildings** (n=unknown)   * Not given   **Tenants** (n=not applicable)   * Not given | The most common management problems were disruption of the peace (21.4% of management incidents), non-payment of rent (21.1%) and poor unit maintenance (15.7%).  LHAs with a greater proportion of non-senior tenants had significantly more management problems, and a greater proportion of younger tenants were involved in management problems compared to older tenants.  Half of LHAs had improved screening policies over the past three years, to include reference checks, landlord reference, police background checks, and home visits; leases were also changed to prohibit criminal and drug-related activities. |
| Sheehan & Guzzardo (2008)  Connecticut, USA  Federal, state, or publicly subsidized housing for the elderly | Cross-sectional survey of RSC working in public subsidized housing (n=49) or other seniors’ housing (n=11) | Housing Staff  Access to Services | **Buildings** (n=unknown)   * Not given   **Tenants** (n=not applicable)   * Not given | RSCs linked tenants to services (93.7%), disseminated information about services (92.1%), organized social programs (84.1%) and mediated tenant disputes (82.5%).  RSCs felt the most common problems tenants face are dementia, depression, isolation and lack of family. Mental health was especially challenging for RSCs, particularly when tenants did not comply with treatment, or there was a lack of supports available on-site.  RSCs also expressed discomfort regarding the lack of resources to fulfill their responsibilities and felt overwhelmed by the number of tenants they had to support. |
| Sheehan, 1996 | Interviews with service coordinators, and property managers on the  **Resident Services Coordinator (RSC) program**  - RSC with background in social services work on site to identify at risk tenants and link them to services | Housing Staff | **Buildings** (n=unknown)   * All buildings were assigned a RSC   **Tenants** (n=not applicable) | Service coordinators and housing managers reported a “clash of cultures” due to differing primary goals problem solving strategies.  Housing managers who had previously carried out social service work with senior tenants felt that their role had been reduced or changed with the RSC, and they had to “let go” of that work in order to collaborate effectively.  Management companies had unrealistic expectations of the RSC and viewed them as “extra staff” who could also help with management issues. RSC also felt tensions when carrying out advocacy work on behalf of tenants and reported being “caught in the middle.”  RSC also described difficulties maintaining confidentiality , as housing managers wanted to be updated on tenant needs. |
| Sheehan, 1999  Connecticut, USA  Federally subsidized seniors housing | Process and outcome evaluation of the  **Resident Services Coordinator (RSC) program**  - RSC with background in social services work on site to identify at risk tenants and link them to services | Housing Staff  Unit Condition  Sociodemographic  Physical Function | **Buildings** (n=6)   * 5 buildings ranged in size from 113 to 115 units; one building was small, with 38 units * All buildings were assigned a RSC   **Tenants** (n=203)   * Average age: 75 * 80% female * 56% Widowed * Average length of tenancy: 6 years * 38% had difficulty with at least one ADL, and 93% had difficulty with at least one IADL | Most property managers viewed the RSC as a valuable resource; however, there was confusion over how RSC should allocate their time, and many felt that RSC should serve primarily as Activities Directors.  RSCs described difficulties maintaining confidentiality, as property managers wanted to be informed of tenants’ needs.  RSCs also had difficulty developing positive relationships with housing staff, due to the amount of time it took to connect tenants to services.  A “good cop” (RSC) / “bad cop” (housing manager) dynamic emerged when tenants had issues with lease compliance.  A pre/post survey of tenants found that most believed tenants had benefited from the program, and housing satisfaction was significantly higher.  For frail seniors, the RSC significantly improved ADL and IADL functioning.  Tenants reported the RSC provided emotional support, a sense of security, socialization, and information. |
| Sheehan, 1997  Connecticut, USA  Public housing for the elderly managed by LHA | Cross-sectional survey of LHA (n=90) on alcohol-related problems | Housing Policy  Housing Staff  Substance Use | **Buildings** (n=unknown)   * Most LHAs were responsible for one (35.2%) or two (26.1%) senior housing complexes * Total number of units for seniors housing ranged from 20 to 600 (for an average of 149 units)   **Tenants** (n=not applicable)   * Not given | 31% of LHAs reported that none of their tenants suffered from alcohol-related problems, and only 4% were identified as “problem drinkers”.  Alcohol-related problems included failure to maintain unit (34.1%), resident self-neglect (32.6%), falls (23.9%), and fires (11.2%); 42% of LHA did not experience any alcohol-related problems, and the frequency of problems increased with size of building.  84.3% had no policies regarding alcohol misuse. LHAs indicated they would intervene if the behaviour was disturbing other tenants (39.1%) or if it was a serious safety threat (26.4%).  75% of LHAs had no staff member with any training related to alcohol or substance use.  LHAs with more younger tenants with mental health challenges rated the extent and seriousness of alcohol-related problems as greater and were more likely to alcohol-related problems. |
| Sheehan, 1986a  Connecticut, USA  Public housing for the elderly managed by LHA | Mixed-methods study on the availability of informal supports, using surveys of LHA (n=71) and tenant (n=60) representatives, and tenant follow-up interviews (n=18). | Tenant Governance | **Buildings** (n=unknown)   * Interviews were conducted with tenants from two buildings; one that had both one- and two-bedroom units (30 units total) and the second had high efficiency and one-bedroom units (31 units total)   **Tenants** (n=not applicable)   * Not given | LHAs felt that tenants provided informal support to one another, most commonly helping with shopping via a buddy system.  Tenants felt that help from neighbours was more accessible when the help needed was short-term; tenants did not want to provide support when the help was needed long-term.  Many tenants avoided social relationships with others, primarily because they wanted to avoid conflict with neighbours, could not keep up with more active tenants, experienced discrimination from neighbours, and avoided asking for help. |
| Sheehan, 1986b  Connecticut, USA  Public housing for the elderly managed by LHA | Cross-sectional survey of LHA (n=71) and tenant representatives (n=60) of tenancy termination policies | Housing Policy | **Buildings** (n=unknown)   * Not given   **Tenants** (n=not applicable)   * Not given | 59% of LHA had no established termination policies for tenants who could not care for themselves.  27% had no policy requiring a level of independent functioning, however 6% had a strict policy, 19.4% had a moderate policy, and 34.3% had an open policy.  14.9% monitored significant changes in health history, 27.9% monitored level of independence, and 22.4% monitored whether tenants were receiving formal support services.  LHAs with strict independence policies had no involvement in discharge planning or monitoring service use, but those with an open policy reported involvement in discharge planning, monitoring level of independence, and monitoring service use. Termination policies did not vary by level of on-site services.  Tenants were able to accurately assess whether their LHA had a strict, moderate, or open termination policy, and 92% agreed with the policy their LHA had. |
| Shi et al. (2018)  Arizona, USA  Government subsidized seniors housing | Cross-sectional survey examining perceptions of Alzheimer’s disease and related dementia | Sociodemographic  Cognition | **Buildings** (n=5)   * None given   **Tenants** (n=207)   * Average age: 75.4 * 65.7% female * 68.1% married * 26.6% had less than 6th grade education * 35.9% reported at some income inadequacy | 31.9% agreed they would develop Alzheimer’s disease or related dementia in the future.  56.1% wished they could know for sure if they would develop Alzheimer’s disease, but only 21.7% indicated they would seek information about disease prevention from doctors and others.  Older age, depression, knowledge about Alzheimer’s disease, and fatalism were associated with higher levels of concerns for developing Alzheimer’s disease. |
| Simning et al. (2012)  New York, USA  Public housing managed by LHA | Cross-sectional psychiatric interview to examine severity of depression and anxiety | Housing Staff  Sociodemographic  Mental Health  Cognition | **Buildings** (n=4)   * High rise buildings with a total of 553 tenants * Have an on-site social worker   **Tenants** (n=190)   * Median age: 66 years * 58% female * 80% Black * 47% did not have high school education * 92% lived alone * 27.1% had cognitive impairment | Anxiety and depression symptoms were moderately correlated.  Correlates of anxiety and depression were similar and consisted of younger age, more comorbidities, reduced mobility, low social support, maladaptive coping, and severe recent life events. |
| Simning et al. (2012)  New York, USA  Public housing managed by LHA | Cross-sectional psychiatric interview to examine mental health care needs and service utilization | Housing Staff  Sociodemographic  Mental Health  Cognition | **Buildings** (n=4)   * High rise buildings with a total of 553 tenants * Have an on-site social worker   **Tenants** (n=190)   * Median age: 66 years * 58% female * 47% did not have high school education * 92% lived alone * 95% non-Hispanic * 80% Black * Lived in unit for an average of 5.8 years (range: 3-10 years) * 27.1% had cognitive impairment * Average of 5 medical conditions * 94.2% had a regular primary care practitioner * 83.7% reported using the on-site social worker | 21% had anxiety and 15% had depression.  31.1% were classified as needing mental health treatment. Of those with a mental health care need, only 46% received treatment.  Most common mental health supports provided were antidepressants (23.2%), psychotropic medication (21.1%) and anxiolytics (3.7%) and follow-up with mental health professionals in past 6 months (9.5%).  Younger age, smaller social networks, more severe recent life events, and more medical service utilization predicted mental health care needs.  Among those with a need, those receiving mental health supports had more IADL impairments, medical conditions, severe life events and utilized more community services. |
| Slater et al. (1998)  Minnesota, USA  Public housing managed by LHA | RCT  **Friend to Friend**  - Health intervention to promote mammary screening among women aged 40 to 79 | Access to Services  Sociodemographic  Physical Health | **Buildings** (n=41)   * High rise buildings   **Tenants** (n=427)   * 80.7% white * 47% less than high school education * 84.3% earned less than $8,000 per year * 48.9% had fair/poor health * Average age: 67.4 (control) and 68.9 (treatment) | Participation in the intervention averaged 27%.  Proportion of women who had a mammograph in past 15 months significantly higher among treatment (64%) versus control (52%) group. |
| Smith & Gauthier (1995)  Manitoba, Canada  Government subsidized seniors housing buildings | Cross-sectional structured interviews examining proximity to services and life satisfaction | Access to Services  Sociodemographic  Physical Health | **Buildings** (n=2)   * Building A – 9 stories, located within 1 block of grocery stores, hair salon, and restaurants; pharmacy and shopping centre within 1.1km * Building B – 124 units, no out-of-home services located within 2 block radius, and nearest grocery store and pharmacy is ~1.5km away   **Tenants** (n=61)   * 67.2% female * 72.% aged 65-74; 14.8% aged 75+ * 31.1% owned a car * 37.7% rated health as fair/poor/bad | Building A had higher levels of satisfaction with the proximity to services, compared to Building B, and closer proximity predicted higher life satisfaction.  Tenants in Building A and B varied in how frequently they accessed services, with Building A tenants more likely to access grocery stores at least once/week (83.3% vs 67.7%), pharmacy at least once/month (80% vs 74.2%), physician’s office at least once/month (26.7% vs 22.6%), and the bank at least once/month (56.7% vs 51.6%). |
| Smith & Sylvestre (2008)  Manitoba, Canada  Government subsidized seniors housing buildings | Longitudinal survey on the impact of seniors housing on personal outcomes for recent movers into seniors public housing  (1 year) | Access to Services  Safety & Security  Sociodemographic  Physical Health  Mental Health | **Buildings** (n=25)   * Ranged from 80 to 210 units * 13 located in inner-city areas, and 12 located in suburbs   **Tenants** (n=137)   * 62% female * 27% aged 65-74; 35.8% aged 75+ * 55% widowed; 46% divorced; 13% married * 85% had high school diploma * 20% reported some degree of income inadequacy | Positive changes in self-reported health were more likely to be reported by those who had more difficulty accessing grocery stores post-move.  Lower morale and higher depression were found for seniors that were persistently dissatisfied with services in the community, as well as with those who were dissatisfied with perceived security levels in the building. |
| Smith et al. (2002)  Manitoba, Canada  Government subsidized seniors housing buildings | Mixed methods examination of neighbourhood characteristics and service provision | Access to Services | **Buildings** (n=39)   * N=39 buildings examined for spatial analysis; n=12 buildings analyzed for neighbourhood analysis, and n=2 buildings analyzed for tenant perspectives.   Neighbourhood Analysis:   * N=6 inner-city buildings and n=6 suburb buildings * Tenant Focus Groups: * Building A: Built in 1971, with 372 units located downtown; within two blocks are a pharmacy, grocery store, bank, and move theatre * Building B: Built in 1976, with 122 age-segregated units; located one block from major highway, with no services within walking distance.   **Tenants** (n=12)   * 50% female * All had lived in building for at least 1 on year | There was a tendency for seniors public housing buildings to be over-represented in inner-city neighbourhoods relative to the number of seniors in that neighbourhood.  Seniors housing buildings in inner-city neighbourhoods had closer proximity to key services, including banks (0.37km vs 0.87km), bus stops (0.09km vs 0.18km), clinics (0.45km vs 1.17km), small grocery stores (0.25km vs 0.94km), pharmacy (0.24km vs 1.05km) and recreation (0.39km vs 0.65km)  Buildings in suburbs were closer to major chain grocery stores (1.29km vs 1.62km).  Tenants were aware of the service environment limitations of their neighbourhoods and reported using public transit or getting rides in order to access services. |
| Smith Black et al. (1997)  Maryland, USA  Public housing developments for seniors managed by LHA | Cross-sectional survey of mental health status | Sociodemographic  Physical Health  Mental Health  Social Health  Substance Use  Cognition  Physical Function & Mobility | **Buildings** (n=6)   * None given   **Tenants** (n=881, weighted)   * 83.6% female * Average age: 74 years * Average education: 7.9 years * 94.5% African American * 94.9% lived alone * 1.8 major medical conditions * 47.4% had poor/fair health * 6.6% had poor/bad mental health * 26.9% had a psychiatric disorder * 9.6% had a cognitive disorder * 7.9% had a mood disorder * 4.5% had a psychotic disorder * 4.3% had a substance use disorder * 10.1% had poor mobility * 90.6% had a confidant * 73.4% had instrumental social support available * 42.5% had a regular medical provider | 37% of tenants were in need of mental health care; greater need was predicted by older age, being male, having poor/fair health, and needing more ADL assistance.  Only 42.5% of tenants who needed mental health care accessed it in the past 6 months; anxiety was the most prevalent reason for accessing mental health care (70.6%).  Tenants who received mental health care were female, younger, had a private physician and medicare insurance, had more major medical illnesses, and poor/bad self-rated mental health. |
| Smith Black et al (1999)  Maryland, USA  Public housing developments for seniors managed by LHA | Prospective survey of nursing home admissions over 28-month period | Sociodemographic  Physical Health  Mental Health  Social Health  Substance Use  Cognition  Physical Function & Mobility | **Buildings** (n=6)   * None given   **Tenants** (n=881, weighted)   * 83.6% female * Average age: 74 years * Average education: 7.9 years * 94.5% African American * 94.9% lived alone * 1.8 major medical conditions * 47.4% had poor/fair health * 6.6% had poor/bad mental health * 26.9% had a psychiatric disorder * 9.6% had a cognitive disorder * 7.9% had a mood disorder * 4.5% had a psychotic disorder * 4.3% had a substance use disorder * 10.1% had poor mobility * 90.6% had a confidant * 73.4% had instrumental social support available * 42.5% had a regular medical provider | 4% of tenants were placed into nursing home over the 28-month period.  Nursing home placement was predicted by older age, receiving informal homecare, greater ADL and IADL needs, poor mobility, poor mental health (including depression, anxiety, and emotional, cognitive, and psychotic disorders). |
| Smith Black et al. (1998a)  Maryland, USA  Public housing developments for seniors managed by LHA | Prospective survey of alcohol use  (28 months) | Sociodemographic  Substance Use | **Buildings** (n=6)   * None given   **Tenants** (n=862, weighted)   * Average age: 74 years * Average education: 8 years * Average length of tenancy: 7 years | 4% had current alcohol disorder, and 22% had lifetime alcohol disorders.  Current drinkers were younger, male, and more educated.  Lifetime abstainers were predominately female and older, with less education, and were low income, widowed, and lived alone.  Compared to those with former alcohol disorders, those with current alcohol disorders were more likely to be male, have higher incomes, have fair to poor health, but fewer medical illnesses.  Those with current or past alcohol disorder were 7.5 times more likely to die during a 28-month follow-up period. Women compared to men were significantly more likely to die. |
| Smith Black et al. (1998b)  Maryland, USA  Public housing developments for seniors managed by LHA | Cross-sectional survey of mental health supports | Sociodemographic  Physical Health  Mental Health  Social Health  Substance Use  Cognition | **Buildings** (n=6)   * None given   **Tenants** (n=818, weighted)   * 84.8% female * Average age: 74 years * Years of education: 7.8 years * 100% African American * 95.1% lived alone * 46.7% had poor/fair health * 6.2% had poor/bad mental health * 26.3% had a psychiatric disorder * 10.1% had a cognitive disorder * 7.7% had a mood disorder * 4.2% had a substance use disorder * 3.2% had a psychotic disorder * 92.2% have a confidant * 75.9% had instrumental social support available * 42.7% has a usual medical provider | Less than half (47%) of those needing mental health care were accessing it formally or informally.  General medical providers were the most common source of formal mental health services (31.3%); only 4.5% were receiving services from a mental health specialist.  Tenants most likely to use formal mental health support had anxiety (37.5%), mood disorder (33.3%), substance use (25.7%), or psychotic disorders (19.2%).  Receiving mental health support was predicted by being younger, having medical insurance, having fair/poor health and more chronic conditions.  Those with ADL impairments were less likely to receive mental health supports. |
| Soderlind (1989)  Massachusetts, USA  Public housing managed by LHA | Pre/post evaluation (4 months)  **Senior Health Monitor Program**  - Nurses on-site to support frail senior tenants | Access to Services  Sociodemographic  Physical Health  Physical Function & Mobility | **Buildings** (n=1)   * 50 units   **Tenants** (n=19)   * Average age: 82 years * 94.7% lived alone * 89.5% female * 73.7% had cardiovascular problems (hypertension, CHF), 73.7% had difficulty moving (arthritis, fractures, Parkinson’s), 26.3% had nutritional problems | At baseline, 36.8% were identified as being able to live independently, 36.8% were classified as needing supportive care, and 26.3% needed 24-hour nursing or psychiatric care.  At follow-up, one client was placed in a nursing home, nine had moved up a level of independence, and four fell to a lower level of independence: 57.9% were able to live independently, 21% needed supportive care, and 21% needed full-time care.  Clients reported being better able to cope with life events, had increased safety, and better access to social supports. |
| Stretch (1976)  Missouri, USA  Public housing managed by LHA | Cross-sectional survey of coping mechanisms and perceptions of safety between seniors in public housing and the community | Mental Health | **Buildings** (n=1)   * None given   **Tenants** (n=36)   * Tenants must have lived in public housing for at least 1 year | No differences in coping reactions were found between elderly black tenants in public housing and a community sample. |
| Stum (1992)  Wisconsin, USA  Public housing for the elderly (Section 8) managed by LHA | Cross-sectional survey of public housing managers on training and development needs | Housing Staff  Access to Services | **Buildings** (n=unknow)   * 160 building managers in the position for an average of 6.3 years * Buildings ranged in size from 20 to 658 units * Most had basic services for the elderly on-site and in community   **Tenants** (N/A)   * Average age of tenants in the buildings being managed: 76 | 63% of building managers were female, with an average age of 50.9. 63% had education beyond high school.  Interest in training was higher among younger managers (<40 years), those who had fewer hours of previous training, and those in communities with fewer services for seniors available.  Younger managers (<40 years) were more interested in training on physical ability changes of tenants, identifying at-risk tenants, agency awareness, obtaining services, conflict resolution, and pre-occupancy screening.  Older managers were less interested in regional seminars, in-service training, and newsletter training. Managers with extensive training backgrounds preferred in-service training. |
| Suggs et al. (1986)  North Carolina, USA  Public housing buildings for the elderly managed by LHA | Cross-sectional survey of LHA (n=40) on on-site services and housing eligibility and transfer policies | Housing Policy  Housing Staff  Access to Services | **Buildings** (n=unknown)   * All LHA had at least 50% or more senior tenants   **Tenants** (not applicable) | Around 42% did not have staff with any specialized training to support aging tenants.  Almost all on-site health and community services were delivered by partner agencies.  Health support on-site included meal programs (46%), 24-hour health care (21%), nursing (23%), and physician care (8%).  Other on-site community services included light cleaning and chores (69%), heavy chores (34%), and errands (50%), transportation (58%), and personal care (37%)  Counselling services were more frequently provided directly by housing, including information and referral (40% directly and 18% indirectly), financial counselling (26% directly and 18% indirectly), and personal counselling (32% directly and 26% indirectly)  32% of housing providers offered recreation activities on-site; 73% also had community-sponsored activities.  89% had written policies for eligibility, and 92% for continued residency that focused on level of independence, past performance as a renter (including rent payment, and not disturbing neighbours), and no criminal activity.  Reconsideration of tenant status was due to psychological problems, safety and health problems, or performance in ADLs. Housing authority staff (87%) and on-site building staff (51%) were most commonly involved in reconsidering tenancy decisions; on-site social workers (9%) and other community partners (24%) were consulted less often. |
| Taylor et al. (2016)  Missouri, USA  Public housing for seniors managed by LHA | Cross-sectional structured interviews of social connections, isolation, and loneliness | Social Health | **Buildings** (n=1)   * None given   **Tenants** (n=47)  None given | 26% of tenants were classified as socially isolated: 19% felt they lacked companionship, 19% felt left out, and 11% left isolated from others.  Staff in the building rated 61% of tenants as not at all isolated, 27% as a little isolated, and 12% has being isolated. |
| Taylor et al. (2018)  St. Louis, Missouri, USA  Subsidized housing (Section 202) for seniors | Cross-sectional survey of loneliness | Housing Staff  Sociodemographic  Mental Health  Social Health | **Buildings** (n=3)   * All had a primary housing manager * Two buildings had 60-70 tenants, and the third had 135 tenants   **Tenants** (n=148)   * 76.6% female * Average age: 74.1 years * 30.3% had less than high school education * 92.4% not married * 81.6% black | 30.8% had no loneliness, 42.7% had moderate loneliness, and 26.6% had high loneliness.  59.7% felt a lack of companionship,  39.2% felt left out, and 11% felt isolated.  14.3% reported high levels of depression, and 17.3% reported high levels of anxiety.  Experiences of loneliness were positively associated with depression and anxiety.  High attendance in group activities reduced loneliness. |
| Teaff et al. (1978)  Multi-State, USA  Public housing for seniors managed by LHA | Cross-sectional survey of wellbeing in relationship to age-segregation | Unit Condition    Sociodemographic  Mental Health  Social Health | **Buildings** (n=103)   * All in operation for at least 3 years at time of study   **Tenants** (n=1,891)   * 73% female * Average age: 73.9 years * 24% married and living with spouse * 70% white * 29% currently on welfare * Average length of tenancy: 4.3 years | Tenants in buildings with greater age segregation (i.e., a greater proportion of senior tenants) had greater levels of activity participation, higher morale, and greater housing satisfaction. |
| Turnquist & Volmer (1980)  Kansas, USA  Elderly public housing managed by LHA | Cross-sectional study of thermal environmental conditions | Unit Condition | **Buildings** (n=1)   * 12 stories with 88 units * Designed specifically for seniors   **Tenants** (n=34)   * Average age: 74.2 years * 88.2% female | 79.4% rated their thermal environmental conditions as neutral, (25.3ºC); 11.8% were too warm (25.9 ºC) and 8.8% were too cold (24.1ºC) |
| Wang & Glicksman (2013)  Pennsylvania, USA  Public housing (Section 8 and 202) managed by LHA | Focus groups with tenants on the benefits of motivations of community gardening  **Gardening Program**  Program run by building staff and gardens located on the outdoor property | Housing Staff  Access to Services  Sociodemographic  Mental Health  Social Health  Food Security | **Buildings** (n=3)   * Ranged from 50 to 155 units * One building allotted plots of land to each program participant * Two buildings built raised wooden beds shared among participants   **Tenants** (n=20)   * 70.5% women * Average age: 71.5 * 88.2% African American | Main reason to join the program was for the nutritious vegetables (94.1%).  Tenants developed relationships with building staff running the program, and staff were integration to maintaining the program.  Tenants formed helping relationships with other tenants in the program.  Several mental health benefits were identified, including relaxation and clearing the mind. It provided something to do and gave a sense of responsibility and accomplishment.  Program provided access to food tenants would not normally have. |
| Weaver et al. (2005)  Mid-Atlantic State, USA  Public housing for elderly managed by LHA | Cross-sectional structured interviews on medication usage | Sociodemographic  Physical Health  Mental Health  Cognition | **Buildings** (n=3)   * None given   **Tenants** (n=46)   * Average age: 64 years * 83% female * 33% had depression * 24% had cognitive impairment | 70% of tenants reported taking between 1 and 22 different medications, including: vitamins (59%), antihypertensives (54%), anticoagulants (52%), diuretics (43%), and diabetes medication (35%).  65% of those consuming medications took 8 or more, putting them at 100% risk for developing drug interactions. |
| Wee at al. (2013)  Singapore  Public rental flats with heavily subsidized rent | Prospective single-group design (1 year)  **Hypertension Screening and Monitoring**  - 3 visits to measure blood pressure  - 6 monthly visits to educate on chronic diseases, screening, and lifestyle factors | On-site Service  Physical Health | **Buildings** (n=5)   * None given   **Tenants** (n=467)   * 48.6% aged 40-59 * 51.4% aged 60+ | Program provided for free.  Amongst untreated hypertensives, older tenants (aged 60+) were more likely to go on hypertension treatment compared to younger tenants. |
| Wee et al. (2016)  Singapore  Subsidized public rental housing managed by the Housing and Development Board | Cross-sectional survey of chronic pain in public rental versus owner-occupied housing | Sociodemographic  Physical Health  Mental Health  Social Health  Cognition  Physical Function & Mobility | **Buildings** (n=2)   * None given   **Tenants** (n=397)   * 52.4% female * 54.9% over age 70 * 52.9% not married * 62% lived with family; 22.7% lived alone * 37.8% non-Chinese * 79.8% less than primary education * 72.5% unemployed * 72.9% monthly income <$1,000 * Common chronic conditions: hypertension (41.6%), hyperlipidemia (22.4%), diabetes (21.7%). * 54.2% overweight * 22.4% had a fall in the past year * 15.9% visually impaired * 9.3% hearing impaired * 26.2% cognitively impaired * 26.2% have depression * 16.1% had IADL impairments * 68.7% had ADL impairments   69.8% had poor social support | Compared to owner-occupied, seniors in rental flats more likely to be female, unmarried, have less than primary education, earn less than $1,000 per month, and have vision and cognitive impairments and depression.  86.6% of seniors in rental housing chronic pain. Rates did not differ by housing type.  Seniors in rental housing reported back pain (18.9%), knee pain (45.3%) and leg, ankle or foot pain (20.8%). |
| Wee et al. (2014)  Singapore  Public rental flats with heavily subsidized rent | Cross-sectional survey of depression in public rental and owner-occupied housing | **Micro:**  Sociodemographic  Physical Health  Mental Health  Social Health  Cognition  Physical Function & Mobility | **Buildings** (n=15)   * 10 are public-rental flats * 5 are owner-occupied flats   **Tenants** (n=397 in rental flats)   * 54.9% over age 70 * 52.4% female * 52.9% not married * 22.7% lived alone; 62% lived with family * 69.8% had poor social support * 41.1% no education * 42.2% earned less than $500 per month * 22.4% had fallen in past year * 15.9% had vision impairment * 9.3% had hearing impairment * 54.2% were overweight * 13.6% had cognitive impairment * 16.1% had impaired IADLs and 11.1% had impaired ALDs * Common chronic conditions: hypertension (41.6%), hyperlipidemia (22.4%), and diabetes (21.7%) | Seniors in public rental flats were more likely to be unmarried, live alone, have less education, lower monthly incomes, and poor social support.  Lifetime prevalence of depression was higher among seniors in public rental flats (26.2%) compared to owner-occupied (14.8%).  After adjusting for socio-demographic factors, those in public rental flats were over 1.5 times more likely to have depression.  For seniors in public rental flats, being unmarried, visual impairment, and poor social networks were associated with depression. |
| Wee et al. (2019)  Singapore  Public rental flats with heavily subsidized rent | Cross-sectional survey of loneliness in public rental and owner-occupied housing | Social Health | **Buildings** (n=15)   * 10 are public-rental flats * 5 are owner-occupied flats   **Tenants** (n=275, rental flats)   * None reported | 32% of tenants in subsidized rented apartments reported loneliness, compared to only 15.4% in owner-occupied housing.  Those in rented apartments were over 2 times more likely to be lonely compared to owner-occupied housing. |
| Wee et al. (2012)  Singapore  Public rental flats with heavily subsidized rent | Cross-sectional survey of cognition and cognitive impairment in public rental and owner-occupied housing | **Micro:**  Sociodemographic  Physical Health  Mental Health  Cognition  Physical Function & Mobility | **Buildings** (n=15)   * 10 buildings were subsidized rented apartments * 5 buildings were owner-occupied units   **Tenants** (n=397, rental flats)   * 54.9% over age 70 * 52.4% female * 52.9% not married * 41.1% had no formal education * 22.7% lived alone; 62% lived with family * Common chronic conditions: hypertension (41.6%), hyperlipidemia (22.4%), and diabetes (21.7%) * 22.4% had fall in past year * 26.2% had depression * 54.2% were overweight * 15.9% had vision impairment * 16.1% had impaired ADLs and 11.1% had impaired IADLs | Seniors in public rental flats were more likely to be unmarried, live alone, have less education, lower monthly incomes, and poor social support.  26.2% of seniors in rental flats had cognitive impairment, compared to 16.1% in owner-occupied flats, and those in public rental flats were nearly two times more likely to have cognitive impairment. |
| Weinberger et al. (1986a)  Indiana, USA  Public housing for the elderly managed by LHA | Prospective study of hospital admissions and nursing home placements  (1 year) | Unit Condition  Sociodemographic  Physical Health | **Buildings** (n=1)   * High-rise apartment building with predominantly 1-bedroom apartments   **Tenants** (n=155)   * Average age: 71.4 * Average education: 9.1 years * 50.3% white * 70.3% female * 82.3% lived alone | 43.8% of tenants were admitted to hospital over 1 year. Hospitalized tenants were more likely to be depressed, report worse physical health, and believe their health is a barrier to doing activities.  10.3% were placed in nursing homes over 1 year. Tenants placed in nursing homes were older, had poor health ratings, and reported that health problems interfered with their activities. |
| Weinberger et al. (1986b)  Indiana, USA  Public housing for the elderly managed by LHA | Cross-sectional structured interviews on the effects of life changes and social support on self-rated health | Unit Condition  Sociodemographic  Physical Health  Mental Health  Social Health | **Buildings** (n=1)   * High-rise apartment building with predominately 1-bedroom apartments   **Tenants** (n=196)   * Average age: 71.6 * 71% female * 50% white * Average education: 9.1 years * 83% lived alone | Senior tenants who experienced more positive changes and fewer negative changes had better self-rated health.  Social support was not related to self-rated health. |
| Weinberger et al. (1988)  Indiana, USA  Public housing for the elderly managed by LHA | Cross-sectional survey of socio-demographic factors and health among:  - public housing tenants  - community members (matched for age, race and sex) | Unit Condition  Sociodemographic  Physical Health  Mental Health  Social Health | **Buildings** (n=1)   * High-rise apartment building with predominately 1-bedroom apartments   **Tenants** (n=155)   * Average age: 70.09 * 72.9% female * 81.3% lived alone * 53.5% white * 25% had depression * 45.7% had been admitted to hospital in past year * 63.2% indicated they had a confidant | Seniors in public housing were more likely to live alone than those from the community.  Health and mental health indicators were similar across the two groups.  Seniors in public housing had less social support and fewer interactions with family.  Seniors in public housing were twice as likely to be admitted to hospital. |
| Winters (2011)  Illinois, USA  Public housing managed by LHA | Retrospective record review and vision exam with pre/post follow-up after receiving new glasses.   (2 weeks)  **Sight for Seniors (SFS)**  - primary eye care services, eyeglasses, and health education for low-income seniors in public housing | Sociodemographic  Physical Health | **Buildings** (n=1)   * Housed between 200 and 250 tenants with an average income of $9,000   **Tenants** (n=59)   * Average age: 71 (range 62-90) * 67.8% female * 30.2% completed high school * 100% black | All patients required spectacle prescription and received new glasses through the SFS program.  82.1% complained of blurry vision; 47.6% had visual programs at both distance and near, 28.3% had blur at distance only, and 23.9% had blur at near only.  After two weeks of wearing new glasses, participants reported significant improvements in general vision, ocular pain, distance activities, near activities, colour vision, peripheral vision, general health, social functioning and mental health. |
| Wright et al. (1979)  Wisconsin, USA  Public housing for the elderly managed by LHA | Secondary data analysis of physician services, with data from a Community Health Survey | Access to Services  Sociodemographic | **Buildings** (n=unknown)   * None given   **Tenants** (n=414)   * Average age: 73.2 years * 83% female * 24% black * Average annual income: $2,600 | Greater use of physician services was seen among senior tenants who had more health conditions, a regular source of health care, more health-related limitations, and lower income.  Higher morale was a significant predictor of physician visits among black senior tenants only. |
| Wright et al., (1979)  Wisconsin, USA  Public housing for the elderly managed by LHA | Secondary data analysis of physician services, with data from a Community Health Survey | Access to Services | **Buildings** (n=unknown)   * None given   **Tenants** (n=104)   * 100% black | The most important factors impacting use of physician services were having a regular source of medical care, having more health conditions, and poorer self-rated health. |
| Wu et al. (2016)  Macau, China  Public housing managed by local housing bureau | Cross-sectional structured interviews examining association between social capital and depression | Sociodemographic  Mental Health | **Buildings** (n=7)   * None given   **Tenants** (n=366)   * 57.1% female * Average age: 73 years * 76.9% reported a monthly income of less than $500 * 55.9% had no formal education | 16.4% of tenants had depression.  Depression was predicted by lower reciprocity and trust but was not predicted by social participation. |
| Yaggy et al. (2006)  North Carolina, USA  Private and public subsidized housing | Process and outcome evaluation  **Just for Us**  - Providing in-home primary care, mental health services and case management with multi-agency, multi-disciplinary teams | Access to Services  Sociodemographic  Physical Health  Cognition | **Buildings** (n=10)   * None given   **Tenants** (n=281)   * Average age: 71 * 63% female * 55% had annual incomes under $7,000 * 81% black * Common chronic conditions: hypertension (85%), diabetes (45%) * 44% have a diagnosed mental health disorder * 27% have dementia * Average of 5 prescriptions per tenant | The easiest part of creating **Just for Us** was finding support from partner agencies. Coordinating multiple agencies to deliver service was challenging (e.g., conflicting working hours, vacations, agency-specific training and reporting requirements, etc.)  Awareness of the program was higher in the buildings that had co-located Just for Us offices onsite.  Medicaid expenses for enrollees shifted over the two-year program from ambulance (49% reduction in spending), emergency department (41% reduction) and in-hospital use (68% reduction) to pharmacy (25% increase in spending) and home health visits (52% increase). |
| Yoo et al. (2006)  Pennsylvania, USA  Public housing for the elderly managed by LHA | Process and outcome evaluation  **6-step community empowerment** model working with **Blue Ribbon Health Panels** (BRHP) to gain community buy-in, identify issues of concern, and develop responses | Tenant Governance  Sociodemographic | **Buildings** (n=12)   * High-rise apartment building with 60 to 105 units * 86.3% occupancy rate * Average monthly rent: $238.75 (range: $210.40 – $265.14)   **Tenants** (n=659)   * Average age: 70.2 years * 71.2% of households led by a woman * 91.5% lived alone * 90.7% reported social security as main income source * Average annual income: $11,128 (range: $9,626 - $12,538) | All 12 buildings agreed to the project, but there were differing levels of buy-in for a BRHP from tenant councils. Tenant councils that were inactive or more dysfunctional took several months to participate in the first meeting.  All buildings had between 4 and 10 BRHP volunteers.  Priority areas for BRHP included: poor crosswalks and transportation options, poor indoor air quality, limited access to exercise equipment, limited access to fresh foods, and nonparticipation of tenants in high-rise activities.  11 buildings identified actions to address their priorities, but only 5 buildings were able to implement action and achieve outcomes.  One tenant council positioned themselves as a gatekeeper, cancelling all BRHP meetings and blocking changes. |
| Ytrehus (2015)  Oslo, Norway  Council housing with housing allowance | Qualitative interviews with tenants exploring the importance of the housing allowance, and their assessment of unit quality | Housing Policy  Unit Condition  Sociodemographic | **Buildings** (n=unknown)   * None given   **Tenants** (n=15)   * 86.7% female * Average age: 78 years * 6.7% married | Tenants reported difficult economic situations and reported having been better off economically in the past compared to their current situation.  Tenants felt secure in their public housing because the local municipality could not evict them and that provided them with housing security.  Tenants were satisfied with the accessibility of their homes, noting large bathrooms, porches, and an absence of thresholds.  Tenants felt like they had insufficient living space and were dissatisfied about the state of maintenance and repairs. Tenants reported major water damage, drafty windows, broken fixtures, worn-out floors, and walls not being repaired.  Tenants felt that rental increases were problematic due to the size of their unit and the state of repairs. Tenants also expressed uncertainty with their housing subsidy, citing fears that an increase in pension could impact their eligibility. |

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**Supplementary Material Table 4.** Housing Topics Organized by Year of Publication

|  | **Older Tenant Characteristics** | | | | | | | | **Social Housing Service Model Characteristics** | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sociodemographic** | **Physical Health** | **Mental Health** | **Social Health** | **Substance Use** | **Cognition** | **Physical Functioning** | **Food security** | **Housing Policies** | **Housing Staff** | **Access to Services** | **Tenant Governance** | **Unit Condition** | **Safety & Security** |
| Blanghard (1964) | x | x | x |  |  |  |  |  |  |  | x |  |  |  |
| Lipman & Marden (1966) | x |  |  | x |  |  |  |  | x |  |  |  |  |  |
| Carp (1967) |  |  | x | x |  |  |  |  |  |  | x |  | x |  |
| Dibble et al. (1967) | x | x |  |  |  |  |  | x |  |  |  |  |  |  |
| Messer (1967) |  |  | x |  |  |  |  |  |  |  |  |  |  |  |
| Fishch et al. (1968) |  |  |  |  |  | x |  |  |  | x |  |  | x |  |
| Jacobs (1969) | x |  |  |  |  |  |  |  | x |  |  | x | x |  |
| Bingham & Kirkpatrick (1975) |  |  |  |  |  |  |  |  |  |  | x | x |  |  |
| Carp (1975a) |  |  | x |  |  |  |  |  |  |  | x |  | x |  |
| Carp (1975b) |  |  |  |  |  |  |  |  |  |  | x |  | x |  |
| Lawton et al. (1975) |  |  |  | x |  |  |  |  |  |  |  |  | x |  |
| Carp (1976) |  |  |  |  |  |  |  |  |  | x | x |  | x |  |
| Stretch (1976) |  |  | x |  |  |  |  |  |  |  |  |  |  |  |
| Kahana et al. (1977) | x | x |  |  |  |  |  |  |  |  |  |  |  | x |
| Carp (1978) |  |  |  | x |  |  |  |  |  |  | x |  | x |  |
| Harel & Harel (1978) | x | x |  |  |  |  |  |  |  |  | x |  |  |  |
| Teaff et al. (1978) | x |  | x | x |  |  |  |  |  |  |  |  | x |  |
| Jonas (1979) |  |  |  | x |  |  |  |  |  |  |  |  |  |  |
| Lawton & Nahemov (1979) | x |  |  | x |  |  |  |  |  |  |  |  | x |  |
| Wright et al. (1979) | x |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Wright et al. (1979) |  |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Carp & Carp (1980) |  |  |  | x |  |  |  |  |  |  | x |  | x |  |
| Lawton & Yaffee (1980) | x |  |  |  |  |  |  |  |  |  | x |  |  | x |
| Turnquist & Volmer (1980) |  |  |  |  |  |  |  |  |  |  |  |  | x |  |
| Boyer (1981) | x | x |  | x |  |  | x |  |  |  |  |  |  |  |
| Noelker & Harel (1981) | x |  | x |  |  |  |  |  |  |  |  |  | x |  |
| Bernstein et al. (1982) |  |  | x |  |  |  | x |  | x | x | x |  |  |  |
| Boles & Jackson (1982) | x |  |  |  |  |  |  |  |  |  |  |  | x |  |
| Dibner et al. (1982) |  |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Deimling et al. (1983) | x |  | x | x |  |  |  |  |  |  |  |  | x |  |
| Harel et al. (1983) | x | x | x | x |  |  |  |  |  |  |  |  | x |  |
| McCauley & Offerle (1983) | x |  |  |  |  |  | x |  |  | x |  |  | x |  |
| Lawton & Hoffman (1984) |  |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Poulin (1984) | x |  |  | x |  |  |  |  |  |  |  |  |  |  |
| Garcia (1985) | x | x | x | x |  |  |  |  |  |  | x |  |  |  |
| Lawton et al. (1985) | x |  |  | x |  |  | x |  |  |  | x |  |  |  |
| Riddick (1985) |  | x | x | x |  |  |  |  |  |  | x |  |  |  |
| Sheehan (1986a) |  |  |  |  |  |  |  |  |  |  |  | x |  |  |
| Sheehan (1986b) |  |  |  |  |  |  |  |  | x |  |  |  |  |  |
| Suggs et al. (1986) |  |  |  |  |  |  |  |  | x | x | x |  |  |  |
| Weinberger et al. (1986a) | x | x |  |  |  |  |  |  |  |  |  |  | x |  |
| Weinberger et al. (1986b) | x | x | x | x |  |  |  |  |  |  |  |  | x |  |
| Hiner et al. (1987) | x |  | x | x |  |  | x |  |  |  | x |  | x |  |
| Marks e al. (1987) | x |  |  |  |  |  |  |  | x |  | x |  |  |  |
| Normoyle (1987) | x |  |  |  |  |  |  |  |  |  |  |  |  | x |
| Baumgarten et al. (1988) | x |  | x | x |  |  |  |  |  | x |  | x |  |  |
| Bojrab et al. (1988) | x | x | x |  |  |  |  |  |  |  | x |  |  |  |
| Heumann (1988) |  |  |  |  |  |  |  |  | x | x |  |  |  |  |
| Weinberger et al. (1988) | x | x | x | x |  |  |  |  |  |  |  |  | x |  |
| Blandford et al. (1989) | x |  |  |  |  |  |  |  |  | x | x | x |  |  |
| Johnson & Mullins (1989) | x |  |  | x |  |  |  |  | x |  |  |  |  |  |
| Morris & Dexter (1989) |  |  |  |  |  |  |  |  |  |  | x | x |  | x |
| Soderlind (1989) | x | x |  |  |  |  | x |  |  |  | x |  |  |  |
| Blandford et al. (1990) | x | x |  |  |  |  |  |  |  |  | x |  |  |  |
| Mullins & Dugan (1990) | x | x | x | x |  |  |  |  |  |  |  |  |  |  |
| Gachaw et al. (1991) | x |  | x |  |  |  |  |  |  |  | x |  |  |  |
| Maynard et al. (1991) | x | x |  |  |  |  |  |  |  |  |  |  |  |  |
| Sheehan & Wisensale (1991) |  |  |  |  |  |  |  |  | x | x |  |  |  |  |
| McFarlane & Tonks (1992) | x | x |  |  |  |  |  |  |  |  |  |  |  |  |
| Strum (1992) |  |  |  |  |  |  |  |  |  | x | x |  |  |  |
| Bazargan et al. (1994) | x | x |  | x |  |  |  |  |  |  |  |  |  | x |
| Smith & Gauthier (1995) | x | x |  |  |  |  |  |  |  |  | x |  |  |  |
| Heumann (1996) |  |  |  | x |  |  |  |  | x | x | x | x | x | x |
| Rabins et al. (1996) | x |  | x |  | x |  |  |  |  |  |  |  |  |  |
| Schulman (1996) |  |  |  |  |  |  |  |  |  | x | x |  |  |  |
| Sheehan (1996) |  |  |  |  |  |  |  |  |  | x |  |  |  |  |
| Buchner et al. (1997) | x |  |  | x | x |  | x |  |  |  |  |  |  |  |
| Sheehan (1997) |  |  |  |  | x |  |  |  | x | x |  |  |  |  |
| Smith Black et al. (1997) | x | x | x | x | x | x | x |  |  |  |  |  |  |  |
| Howland et al. (1998) | x | x |  | x |  |  | x |  |  |  |  |  |  |  |
| Kweon et al. (1998) | x |  |  | x |  |  |  |  |  |  |  |  |  |  |
| Sheehan & Stelle (1998) |  |  |  |  |  |  |  |  | x |  |  |  | x |  |
| Slater et al. (1998) | x | x |  |  |  |  |  |  |  |  | x |  |  |  |
| Smith Black et al. (1998a) | x |  |  |  | x |  |  |  |  |  |  |  |  |  |
| Smith Black et al. (1998b) | x | x | x | x | x | x |  |  |  |  |  |  |  |  |
| Sheehan (1999) | x | x |  |  |  |  |  |  |  | x |  |  | x |  |
| Smith Black et al. (1999) | x | x | x | x | x | x | x |  |  |  |  |  |  |  |
| Cook et al. (2000) | x |  | x | x | x |  |  |  |  |  |  |  |  |  |
| Harris et al. (2000) | x | x |  |  |  |  |  | x |  |  |  |  |  |  |
| Rabins et al. (2000) | x |  | x |  |  |  |  |  |  |  | x |  |  |  |
| Robbins et al. (2000) | x |  | x |  | x | x | x |  |  | x | x |  |  |  |
| Pierce et al. (2001) | x | x |  | x |  |  |  |  |  |  |  |  |  |  |
| Cheng (2002) | x | x | x |  |  |  | x |  |  |  |  |  |  |  |
| Smith et al. (2002) |  |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Bowie (2003) | x | x | x |  |  |  |  |  |  |  |  |  |  |  |
| Gibler (2003) | x | x | x |  |  |  | x |  |  |  |  |  | x |  |
| Klinedinst (2005) | x | x |  | x |  |  |  | x |  |  | x |  |  |  |
| Weaver et al. (2005) | x | x | x |  |  | x |  |  |  |  |  |  |  |  |
| Yaggy et al. (2006) | x | x |  |  |  | x |  |  |  |  | x |  |  |  |
| Sheehan & Guzzardo (2008) |  |  |  |  |  |  |  |  |  | x | x |  |  |  |
| Smith & Sylvestre (2008) | x | x | x |  |  |  |  |  |  |  | x |  |  | x |
| Lee (2009) | x | x |  |  |  |  |  |  |  |  |  |  | x |  |
| Noice & Noice (2009) | x |  |  | x |  | x | x |  |  |  |  |  |  |  |
| Robison et al. (2009) | x |  | x |  | x |  |  |  |  | x |  | x |  |  |
| Yoo et al. (2009) | x |  |  |  |  |  |  |  |  |  |  | x |  |  |
| Blumberg et al. (2010) | x |  |  | x |  |  |  |  |  | x | x |  |  |  |
| Cotrell & Carder (2010) | x | x | x | x |  | x | x |  |  |  | x |  |  |  |
| Sanders et al. (2010) |  | x |  | x |  |  | x |  |  | x |  |  |  |  |
| Jang et al. (2011) | x |  | x |  |  |  |  |  |  |  |  |  |  |  |
| Parsons et al. (2011) | x | x |  |  |  |  | x |  |  |  |  |  |  |  |
| Seo et al. (2011) |  |  |  |  |  |  |  |  |  |  |  |  | x |  |
| Winters (2011) | x | x |  |  |  |  |  |  |  |  |  |  |  |  |
| Morris (2012) | x |  |  | x |  |  |  |  |  |  |  |  |  |  |
| Parton et al. (2012a) |  | x |  |  |  |  | x | x |  | x | x |  | x | x |
| Parton et al. (2012b) | x | x | x | x |  |  | x |  |  | x | x |  | x |  |
| Simning et al. (2012a) | x |  | x |  |  | x |  |  |  | x |  |  |  |  |
| Simning et al. (2012b) | x |  | x |  |  | x |  |  |  | x |  |  |  |  |
| Wee et al. (2012) | x | x | x |  |  | x | x |  |  |  |  |  |  |  |
| Chi et al. (2013) | x | x | x | x |  | x | x |  |  |  | x |  |  |  |
| Cumings et al. (2013) | x |  |  |  | x |  |  |  |  |  |  |  |  |  |
| Wang & Glicksman (2013) | x |  | x | x |  |  |  | x |  | x | x |  |  |  |
| Wee et al. (2013) |  | x |  |  |  |  |  |  |  |  | x |  |  |  |
| McCunn & Gifford (2014) | x |  |  |  |  |  |  |  |  |  |  |  | x |  |
| Pater et al. (2014) | x | x |  |  |  |  | x |  |  |  |  |  |  |  |
| Schneider et al. (2014) | x | x |  |  |  |  | x |  |  |  |  | x |  |  |
| Wee et al. (2014) | x | x | x | x |  | x | x |  |  |  |  |  |  |  |
| Ahrentzen et al. (2015) | x |  |  |  |  |  |  |  |  |  |  |  | x |  |
| Elliott et al. (2015) | x | x |  |  |  | x |  |  |  |  |  |  |  |  |
| Morris (2015) | x |  |  |  |  |  |  |  |  |  |  |  |  | x |
| Ytrehus (2015) | x |  |  |  |  |  |  |  | x |  |  |  | x |  |
| Brydges et al. (2016) | x |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Chen (2016) | x |  | x | x |  |  | x |  |  |  | x |  |  |  |
| Taylor et al. (2016) |  |  |  | x |  |  |  |  |  |  |  |  |  |  |
| Wee et al. (2016) | x | x | x | x |  | x | x |  |  |  |  |  |  |  |
| Wu et al. (2016) | x |  | x |  |  |  |  |  |  |  |  |  |  |  |
| Agarwal et al. (2017) | x | x |  |  |  |  |  |  |  |  | x |  |  |  |
| Fox et al. (2017) | x | x |  | x |  |  |  |  |  |  | x |  | x | x |
| Hollar et al. (2017) | x | x |  |  |  |  |  |  | x |  |  |  |  |  |
| Kim & Kim (2017) |  |  |  | x |  |  |  |  |  |  | x |  | x |  |
| Larkin et al. (2017) | x |  | x |  | x |  |  |  |  |  |  |  |  |  |
| Lucio & McFadden (2017) |  |  |  |  |  |  |  |  | x | x |  | x |  |  |
| Noonan et al. (2017) | x | x | x |  | x |  | x | x |  | x | x |  |  |  |
| Agarwal & Brydges (2018) | x | x |  | x |  |  |  |  |  |  | x |  |  |  |
| Agarwal, Angeles et al. (2018) | x | x | x |  |  |  | x | x |  |  | x |  |  |  |
| Agarwal, Habing et al. (2018) | x | x | x |  |  |  | x |  |  |  |  |  |  |  |
| Diwan et al. (2018) | x | x | x |  |  |  |  |  |  |  | x |  |  |  |
| Goneya et al. (2018a) | x | x | x | x |  |  | x |  |  |  |  |  |  |  |
| Coneya et al. (2018b) | x | x | x | x |  |  | x |  |  |  |  |  |  | x |
| Gusmano et al. (2018) |  | x |  |  |  |  |  |  |  |  | x |  |  |  |
| Lo et al. (2018) |  | x |  | x |  |  | x |  |  |  | x |  |  |  |
| Shi et al. (2018) | x |  |  |  |  | x |  |  |  |  |  |  |  |  |
| Taylor et al. (2018) |  |  | x | x |  |  |  |  |  | x |  |  |  |  |
| Agarwal et al. (2019) | x | x | x |  |  |  | x | x |  |  | x |  |  |  |
| Lipsitz et al. (2019) | x | x | x |  |  |  | x |  |  |  | x |  |  |  |
| Park et al. (2019) |  |  |  |  |  |  |  |  |  |  | x |  |  |  |
| Wee et al. (2019) |  |  |  | x |  |  |  |  |  |  |  |  |  |  |