



Old age poverty: a scoping review of the literature

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Title: Old Age Poverty: A Scoping Review of the Literature

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Abstract: The eradication of poverty continues to be a priority for policymakers worldwide. At the same time trends in population aging results in a strong need to understand and address poverty in the later life years. While the literature on poverty is vast, the specific focus on old age poverty is limited. Research has an important role to play to this end, by building a strong empirical base to inform age-inclusive poverty alleviation policies, programs and practices. The purpose of this review is to map out current empirical research on old age poverty, delineate knowledge gaps, and provide recommendations for future research.

Keywords: old age poverty, population ageing, scoping review

Introduction

Worldwide populations are ageing. According to the United Nations Department of Economic and Social Affairs (UNDESA, 2015), in 2015 one in eight people worldwide was aged 60 years or over globally. They projected that by 2030, for the first time in human history, the older population will outnumber children (aged 0 to 9 years), and by 2050 will exceed the population of adolescents and youth (aged 10 to 14 years). Declining mortality and fertility rates are the major causes of this unprecedented demographic shift in age compositions.

Several characteristics of global population ageing are worth highlighting. For instance, although nearly all societies are experiencing (or will experience) population aging, the fastest rates of population aging are occurring in developing countries, whereby, from 2000 to 2015, the number of older persons in such regions grew from 376 to 602 million – “an increase of 60 per cent – and it is projected to grow by 71 per cent [an approximate population of 1 billion older persons] between 2015 and 2030” (UNDESA, 2015, p. 9). Also, population aging is occurring at significant rates even within the older demographic group, whereby the number of older people 80 years and older is expected to nearly triple (from 2015 at 125 million people) to 434 million by 2050 (UNDESA, 2015). Further, as women usually live longer than men (an average of 4.5 years), in almost every country the older population is predominately women; women comprised 54 percent and 61 percent of the global population aged 60 years or over and aged 80 years or over, respectively.

Population aging is a major global issue of the 21st Century, offering societal opportunities and challenges (United Nations Population Fund [UNFPA] and HelpAge International [HAI], 2012). Older people can (and do) play contributory roles (economically, socially, and culturally) in societies when afforded the chance to do so. However, poverty and

social exclusion represent two of the most significant barriers for older people to both “contribute to development and share in its benefits” (UNFPA & HAI, 2012, p. 12). An enriched understanding of and discourse on old age poverty, then, is pertinent and pressing in the context of global aging.

Within development discourse, the eradication of poverty is a key priority for policymakers worldwide. For example, the newly proposed Sustainable Development Goals (SDGs), a vital component of the post-2015 global development framework that expands on and replaces the Millennium Development Goals, iterates “poverty eradication is the greatest global challenge facing the world today” (United Nations General Assembly, 2014, p. 3). Of the 17 proposed goals, goal number one is to “end poverty in all its forms everywhere” (p. 6). However, the identification and discussion of old age poverty within this directive are not explicit, and literature with a specific focus on old age poverty is minimal (Oris, Gabriel, Ritschard, & Kliegel, 2017). The trends in population ageing require concerted efforts to understand and address the relevant age-dimensions of poverty, especially those in older adulthood. A strong knowledge base regarding old age poverty is critical to fully actualize the opportunities and address key challenges of population aging. Research has an important role to play to this end, by building a robust empirical base to inform age-inclusive and appropriate poverty alleviation policies, programs, and practices.

The purpose of this review was to synthesize the knowledge base on old age poverty by mapping out the current empirical research on old age poverty. Specifically, we sought to summarize how the studies’ conceptualized old age poverty and identify study objective(s) and key finding(s). Following this process, we delineated the knowledge gaps within current research and offered recommendations for future research.

Methods

To critically review the literature on old age poverty, we utilized a scoping review methodology, which is a systematic way of determining “the extent, range and nature of research activity” (Arksey & O’Malley, 2005, p. 21). Specifically, we utilized Arksey and O’Malley’s (2005) methodological framework for conducting our review. The main steps in the framework include determining the research question(s), identifying the relevant studies, selecting the studies to be included, charting the data, and then collating, summarizing, and reporting the results. The optional sixth step, which was not undertaken for this review, entails engaging stakeholders to contribute to the review.

We used a scoping review methodology, because (unlike systematic literature reviews) it does not exclude studies based on research design (Dijkers, 2015). For this review, we wanted to gain an overarching view of the evidence-based knowledge on old age poverty, rather than focusing on the findings of a specific dimension of the phenomenon.

Data Sources, Search Strategy, and Eligibility Criteria

A literature search was conducted in October 2017 in three databases: Abstracts in *Social Gerontology*, *Social Services Abstracts*, and *Social Work Abstracts*. The key terms older persons and poverty (and their synonyms) were searched in the abstracts. Inclusion criteria included: peer-reviewed, empirical research, published in the last ten years (2007-2017), written in English, and with available links to full-text articles. The search resulted in 1441 articles, once duplicates were removed, and abstracts were scanned for relevancy, 56 articles remained for a full review.

Data Extraction

We extracted the data using three different excel spreadsheets. The first contained descriptive and methodological characteristics of each study and included: author(s) name(s), year of publication, the location of study, methodology (quantitative, qualitative, or mixed), and sample (which included sample size and age of participants). The second spreadsheet

included extracted quotes and statements describing the conceptualization of old age poverty, and the final spreadsheet contained the main objective(s) and key finding(s) of the study.

Results

Descriptive and Methodological Characteristics

Table 1 presents the descriptive and methodological characteristics of each study.

[insert table 1]

Location. Thirty-five of the articles in the review were single-country studies that focused on examining old age poverty at the national level. Six articles investigated the phenomenon in two countries or more, thus offering cross-national comparisons. The remaining 14 were studies exploring old age poverty at more of a local level, such as only rural regions of a country (e.g., rural China), a state or province (e.g., Wisconsin, US or Chai Nat province, Thailand), a city (e.g., Detroit, USA), or even communities or areas within a city (e.g., Metro Vancouver, Canada).

The countries being represented in the studies can be categorized as high, upper-middle, lower-middle, or low-income countries (World Bank, 2018). A high-income country has gross national income (GNI) per capita of US\$12,236 and above. An upper-middle income country has a GNI per capita between US\$3,956 and \$12,235. A lower-middle income country has a GNI per capita between US\$1,006 and \$3,955. Lastly, a low-income country has a GNI per capita of US\$1,005 or less. Forty-four of the studies were from high-income countries and the majority ($n=30$) from the US. Six of the studies were conducted in the context of upper-middle-income countries, and included, China, Costa Rica, Lebanon, Peru, and Thailand. Four of the studies explored old age poverty in lower-middle income countries and included India, Kosovo, Nigeria, and Vietnam. One study was conducted in Cambodia, a low-income country. Also, there was one study that examined 15 Sub-Saharan African countries, of which 13 were low-income, and 2 were lower-middle income countries.

Methodology. Fifty-one of the studies were based on quantitative research designs, three utilized qualitative approaches, and two studies employed mixed methods. All the quantitative studies utilized cross-sectional surveys. Most ($n=46$) utilized secondary data sets (e.g., Luxembourg Income Survey [LIS], US Census, and China Health and Nutrition Survey) and five used cross-sectional surveys developed for the study. Three studies utilized qualitative research designs, with semi-structured interviews as the data collection method. Onolemhemen (2009) used a phenomenological qualitative approach, Kietzman et al. (2012) used a grounded theory approach, and Adeyanju et al. (2015) reported a general qualitative research approach that used content analysis. The two mixed methods articles (focus groups and a cross-sectional survey) report on the same study (Ryser & Halseth, 2011a, 2011b), with the first article (2011a) reporting on one dimension of the study using qualitative and quantitative findings and the second article (2011b), outlining quantitative findings on a second dimension.

Sample size and age. The sample sizes of the studies can be categorized broadly as large or small. The quantitative cross-sectional studies had relatively large sample sizes (from $n=160$ to $n=2,697,000$). Studies using national secondary data sets were at the mid and higher end range of the sample sizes. Also, the range in sample size among the cross-sectional surveys varied because some studies reported weighted sample size, while others presented the unweighted numbers. The sample sizes of the three qualitative studies were relatively small ($n=13$, 15, and 22, respectively). The sample size of the mixed-method study was 277. The age criterion demarking old age in the studies varied: most used the 65+ cut-point ($n=32$), or the 60+ ($n=13$); four studies each used age 50+ or 55+, two studies used 70+ and one used 75+ as indicators of old age.

How is old age poverty conceptualized?

The way in which poverty is defined in the studies can be grouped into four general categories as depicted in Table 2. Most studies ($n=50$) defined poverty based on income and consumption measures. Less common was poverty indicators based on assets or wealth measures ($n=8$), self-perceived poverty ($n=6$), and poverty based on other measures ($n=6$). The final category is the largest ($n=36$) and includes measures that did not fit easily into the first three groupings. Only 12 studies utilized a multi-dimensional definition of poverty (e.g., used two or more categories to conceptualize poverty).

[insert table 2]

Category 1, poverty based on income and consumption measures. The majority of studies conceptualized poverty via objective indicators, which included income and consumption measures. Often, these two indicators were combined into an income indicator based on a specific income level based on calculations of various costs of living. On the other hand, for studies using a consumption indicator a specific income level was assigned to meet consumption needs.

These conceptualizations of poverty were predominately relative measures. For example, Kim and Cook (2011) used the official poverty line in South Korea to define old age poverty, whereby “an elderly is classified as poor . . . if his or her self-support is lower than a pre-determined poverty line . . . which is equivalent to 3,840 kW for married individuals and 4,800 kW for others” (p. 90). Albeit, some of the studies did utilize absolute measures, such as Lee and Yoon (2011), who defined low income in their study as older persons having an annual income of less than [US]\$10,000.

Other studies focused more on consumption expenditures, such as Wallace and et al. (2013) and MacDonald et al. (2010), who conceptualized old age poverty using the Elder Economic Security Standard Index (Elder Index), or some variation of it. The Elder Index conceptualizes old age poverty based on goods and services (e.g., housing costs, food costs,

transportation and health care costs) used by the typical older person. The Elder Index is argued to be more reflective of the costs associated with older persons, and a more appropriate measure than national poverty measures based on the general population. For example, older people in the US have higher health care costs compared to their younger counterparts, where health care costs make up 18 percent of older people's core expenses as compared to 8 percent for non-older persons (Wallace et al., 2013).

Old age poverty was also defined by some studies (see for example Ryser & Halseth, 2011a, 2011b; Peeters & Wouter, 2015; Wight et al., 2008) as recipients of old age welfare benefits. That is, older persons whose income falls below a certain income level (e.g., the Low-Income Cut-Off [LICO] in Canada) and thus eligible to receive certain (cash or non-cash) benefits. While these studies simply measured poverty by identifying whether the participant was a beneficiary of public old-age benefits, it is still based on income and consumption expenditures. Thus, these studies fall under category 1.

Category 2, poverty based on assets or wealth measures. Eight studies used an assessment of assets or wealth as an objective indicator of old age poverty. As an example, Rank and Williams (2010) conceptualized old age poverty as both income poverty (falling below the official US poverty line) and asset poverty. The latter they defined as a "household that does not possess a level of assets that would enable them to remain above the official poverty line for three months"; assets included "home equity, savings, checking, stocks, bonds, and so on" (p. 338). Alternatively, in Zimmer's (2008) study of old age poverty and health in rural Cambodia the household wealth index, which "is widely used in recent analyses that consider poor countries" was used (p. 60). This measure of old age poverty was based on household assets, including: "radio, television, jewelry, motorcycle, fan, telephone, car, or refrigerator", and structural components including: a "modern toilet, which is defined as an indoor toilet that can be flushed [and] a modern floor, which is defined as a floor that is

constructed using modern materials, specifically, finished wood, vinyl, asphalt, ceramic, marble or cement, as opposed to a floor constructed of dirt, clay, unfinished wood, or similar types of primitive materials” (p. 60).

Category 3, self-perceived poverty. Six studies included a subjective indicator of old age poverty. In these studies, participants were commonly asked to identify their poverty status on a pre-determined scale. For example, Wang et al. (2011) used a Life Satisfaction Scale that was used in the 2006 China and Health National Survey, to measure “subjective well-being poverty” (p. 714). The scale was used to “rate subjective well-being of senior citizens, [in which] the well-being status is personally rated into three levels: poor or very poor, average and good or very good, which are represented by 1, 2 and 3 respectively, where ‘poor or very poor’ (1) indicates poverty” (p. 720). The study by Gray et al. (2008) is another example, they asked their participants “Do you feel poor compared to your neighbors?” with responses: “feeling poorer than your neighbors, feeling just as poor as your neighbors, and not feeling poor” (p. 216).

Category 4, other measures of poverty. Seven studies included another measure of poverty, including: socio-demographic indicators, such as low education levels (Callander et al., 2012; Hazzouri et al., 2011; Wight et al., 2008), unemployment status/levels (Chaaya et al., 2010; Wight et al., 2008), poor health status (Callander et al., 2012; Zimmer, 2008), residency (living in an impoverished community) (Chaaya et al., 2010; Hazzouri et al., 2011; Zimmer, 2008), and food insecurity (Chi & Tucker-Seeley, 2013). For example, in the study by Chaaya et al. (2010), a poor community was defined as “densely populated areas with poor physical infrastructure and limited work opportunities for its residents” (p. 28). Finally, the study by Adeyanju et al. (2015) used the term “destitution” as a definition or measure of poverty.

What are the Studies’ Main Objective(s) and Finding(s) Regarding Old Age Poverty?

The articles can be categorized into five types, based on the main objective(s). Most ($n=13$) explore the risk and protective factors and processes of old age poverty (e.g., old age poverty is a dependent variable) – labeled type one. In contrast, 11 studies, labeled type two, examine how poverty affects factors and processes (e.g., old age poverty is an independent variable). The six studies categorized as type three seek to understand the challenges or strengths of older persons living in poverty. Type four studies ($n=12$) investigate how one (or more) factors or processes influence each other, for older people living in poverty (e.g., how does an increase in public pension affect the health status of low income older persons?). Fourteen studies were labeled as type five, using micro-simulations to estimate poverty rates (e.g., what is the incidence of poverty among older immigrants in Canada?), an old age poverty threshold, and the likelihood of experiencing old age poverty. In the next section, we review the key finding(s) under each study type. Table 3 outlines the main objectives(s) of based on the five types detailed above.

[insert table 3]

Type one. Eleven main risk or protective factors and processes were examined in type one studies, eight at the individual level including age, financial kin transfers, employment status, gender, nativity, living arrangements, home tenure type (e.g., own or rent), and marital status.

At the individual level, the following were found to be risk factors and processes: older age (Berthoud et al., 2009), retired/not-employed (Yang, 2011), previous employment (pre-retirement) was irregular or non-standard (Yang, 2011), being a woman (Yang, 2011), being a women who is unmarried/divorced (Peeters & Wouter, 2015), immigrant/non-native born (Phua, McNally, & Park, 2007), immigrating at an older age (Phua et al., 2007), living in a household with a greater number of children (Tai & Treas, 2009). Alternatively, the following were found to be protective factors and processes at the individual level: receiving

financial kin transfers (Kim & Cook, 2011; Lee & Lee, 2009), paid work post-retirement (Yang, 2011), co-residency (Phua et al., 2007; Tai & Treas, 2009; Yang, 2011), and homeownership (DeWilde & Raeymaeckers, 2008).

Three risk or protective factors occurred at the environmental level, including social pensions, social housing provisions, and the type of welfare regime of the state. Six studies examined multiple risks or protective factors and processes, while the remaining five focused solely on one.

At the environmental level, social (public) pensions were found to be a protective factor in five out of the seven studies that investigated its effect on old age poverty (Choi & Kim, 2010; DeWilde & Raeymaeckers, 2008; Kakwani & Subbarao, 2007; Long & Phua, 2009; Peeters & Wouter, 2015). Albeit, in one study (DeWilde & Raeymaeckers, 2008), when the social pension was compared to social housing provisions the latter was found to be most significant in reducing old-age poverty. The other two studies found that social pension had little or no significant effect. For instance, in Lee and Lee's (2009) study, which examined the contributions of public transfers versus private familial transfers, they found that it was the latter that contributed most to the income of "the single elderly in the low-income group," which was the sub-cohort that are at the most risk of living in poverty (p. 405). Also, van Vliet, Been, Caminada, and Goudswaard's (2012) study of 15 European countries, concluded that there was "no evidence that an increasing share of private pensions leads to higher income inequality and poverty among older people" (p. s15). Social exclusion was found to be a risk factor and process in Lee, Hong, and Harm's (2014) study, whereby "exclusion from social and civic life, exclusion from asset building, and exclusion from the labor market—contribute significantly to Korean immigrant older adults' odds of living in poverty" (p. 386).

Type two. Of the nine type two studies, all of the factors and processes examined were at the individual level, and all were health-related. Most researchers sought to examine how poverty can influence factors and processes related to health (including mental health), the remaining two focussed on out-of-pocket health expenditures and access and use of health information, respectively. None of the studies explored multiple factors and processes.

All of the studies reported that poverty was significantly associated with poorer health statuses (Adena & Myck, 2014; Chi & Tucker-Seekly, 2013; Gray, Rukumnuaykit, Kittisuksathit, & Thongthai, 2008; Kim, Richardson, Park, & Park, 2013; Ko, Jang, Park, Rhew, & Chiriboga, 2014; Johnson, Schoeni, & Rogowski, 2012; Louie & Ward, 2011; Sachs-Ericsson, Corsentino, & Cogle, 2009; Wight et al., 2008). For example, Chi and Tucker-Seeley's (2013) established a significant association between "the number of financial hardships and self-reported oral health" (p. 1509). Ko et al. study (2014), is another example, whereby older people who lived in poorer neighbourhoods, defined as having a higher proportion of residents living below a poverty line, "were more likely to report poorer ratings of health" (p. 95). The three studies that focused on mental health indicated that poverty was significantly associated with lower mental health statuses. For instance, Kim et al. (2013) findings supported the hypothesis that poverty and depression were significantly associated only with women and not men. Albeit, Sachs-Ericsson et al. (2009) found that having more difficulties in meeting basic needs was a significant predictor of higher cognitive functioning (e.g., orientation, registration, attention, calculation, recall, and language).

Only one study focused on the association between poverty and the access and use of health information. In that study, Wiltshire et al. (2009) found that poverty is a significant predictor of being less likely to seek health information and utilizing such knowledge during a visit with a physician. Lastly, in the sole study that investigated the links between poverty and out-of-pocket health care expenditure, Kim and Richardson (2014) find no significant

association between poverty status and out-of-pocket health care, however, older persons who have more than one health insurance (namely, Medicaid and Medicare) spent less than those who had coverage only by one of the health insurances programs.

Type three. Five out of the six studies categorized as type three focussed on the challenges of older persons living in poverty. For example, two exploratory studies reported on the challenges older persons living in poverty experienced, including a vary of social (e.g., experiencing social stigma), economic (e.g., low income leading to fewer or no options in terms of health care choices), and cultural (e.g., disinheritance of a widow due to rejecting cultural norm of marrying your husband's brother) challenges (Adeyanju et al., 2015; Kietzman et al., 2012). Three of the studies identified specific challenges experienced by older adults living in poverty, such as incurring high housing costs (Ryser & Halseth, 2011a), over-reliance on family-support (Ryser & Halseth, 2011b), and barriers to physical activity participation (Plow, Allen, & Resnik, 2011).

Only one study adopted a strengths-based approach to an understanding of older persons living in poverty. Onolemhemen (2009) explored the lived experiences of older women living in poverty in Detroit, US, identifying both personal strengths (e.g., "resilience, spirituality/commitment to the church, managing limited economic resources, and strong and attentive family members") and environmental strengths (e.g., "living in an urban environment and benefits derived from government income transfer programs") (p. 740).

Type four. Ten of the 12 type four studies sought to understand health-related outcomes of certain factors and processes, for older persons living in poverty (e.g., health status was the dependent variable). Independent variables examined in these studies included, individual level factors: employment status, gender, English proficiency level (for immigrants in the US specifically), length of residency (for immigrants in the US specifically), marital status, coping strategies, home tenure type, wealth status, disability

status, and income/financial status. At the environmental level, independent variables included: social pensions, the built environment, neighbourhood cohesion, and social support. The remaining two studies used a broad concept, successful ageing, as their dependent variable (which included some health-related indicators), and were exploratory and thus did not have specific independent variables.

Regarding the key findings of type four studies, the following were found to be risk factors and processes of worse health-related outcomes (e.g., physical disability, lower mental health status or decreased accessed to health care utilization) for poor older persons: being a woman (Hazzouri et al, 2011), a widow (Lee & Yoon, 2011), living alone (Lee & Yoon, 2011) low income (Jeon, Noguchi, Kwon, Ito, & Tamiya, 2017; Lee & Yoon, 2011), having a disability (Jeon et al., 2017), scoring low on a wealth index (as measured by the amount of assets you own and the type of household structure), lack of English proficiency (for immigrants living in the US) (Lee & Yoon, 2011), and longer residency (for immigrants living the US) (Lee & Yoon, 2011). Alternatively, social pension (Brenes-Camacho, 2011; Jeon et al., 2017), public health insurance (Kim & Frank-Miller, 2015) employment (Chaaya et al., 2010), social support (Lee & Yoon, 2011), and spiritual coping strategies (Lee & Yoon, 2011) were found to be protective against negative health-related outcomes.

There were mixed findings related to the built environment and neighbourhood connectivity/cohesion. For instance, Chen et al. (2016) found that neighbourhood support and "at-ease walkable proximity" to community facilities were both independently and significantly associated with more positive mental health scores (p. 423). In contrast, Engel et al. (2016) did not find that street connectivity, nor social cohesion was significantly associated with higher health-related outcomes, albeit they did find that the two were significantly associated to "capability wellbeing" (a non-health related indicator) (p. 4).

The two exploratory studies conducted by Olivera and Tournier (2016) and Chung and Park (2008) investigated the determinants of successful ageing of low income older persons in Peru and South Korea, respectively. Olivera and Tournier (2016) found that “male gender, younger old age, literate, employed, low food insecurity, good nutritional status, normal blood pressure, absence of disabilities, non-smoker, empowerment, good self-esteem, absence of mental disability, and less frequent contact with a social network” (p. 1691) predicted higher scores in successful ageing among poor older persons. In Chung and Park’s (2008) study successful ageing among poor older persons was predicted by male gender, having “a positive attitude towards life,” the “success of adult children,” and positive “relationships with others” (p. 1061).

Type five. Of the type five studies, most researchers ($n=8$), sought to estimate old age poverty incidences using alternative measures/methodologies and comparing it with rates of poverty derived from official or more traditional measures/methodologies old age poverty incidences. Three studies employed only official measures/methodologies, and one each used an income threshold to meet basic needs, for older persons specifically, and the likelihood of experiencing old age poverty.

All but one of the eight studies using alternative poverty measures/methodologies to estimate poverty, found that old age poverty was underestimated when comparing rates of poverty derived from official measures (Butrica, Murphy, & Zedlewski, 2009; Chung, Issacs, & Smeeding, 2013; Hutto, Waldfogel, Kaushal, & Garfinkel, 2011; Nicholas & Wiseman, 2009; Peeters, Debels, & Verpoorten, 2013; Wallace et al., 2013; Wang et al., 2011). For example, Butrica et al. (2009) used an alternative measure of poverty that accounted for out-of-pocket health spending and found that “between 0.3 and 1.5 million more older adults live in poverty than acknowledged by the official measure [in the US],” which only accounts for cash income (p. 484). Wallace et al. (2013) study, another example, used the Elder Index to

determine the poverty rates of older Latinos compared to non-Latino white in California, US. They found that the basic threshold for a single older person living in California in 2007 was \$21,011 and for a couple was \$30,472, which differed markedly from the 2007 official poverty measures that indicated the basic threshold was \$10,272 for a single adult and \$13,690 for a couple, leading the authors to conclude that “almost 60 % of Latinos have incomes below the Elder Index compared to one-quarter of non-Latino whites” (p. 239).

In contrast, Callander et al. (2012) found that only 59 percent of the those who are in income poverty using a traditional measure are also in freedom poverty, an alternative poverty measure that conceptualizes poverty “as a lack of freedom and that the people in poverty do not have the capabilities to participate in society and as such have poor living standards” (p. 371). This measure included indicators for income, health, and education.

Two of the three studies that estimated old age poverty incidences using official or more traditional measures/methodologies had a specific objective (Kaida & Boyd, 2011; Gustaffson, Johansson, & Palmer, 2009). Kaida and Boyd (2011) estimated poverty incidences of a specific cohort group, oldest-old (70+) immigrants, and found that compared to their Canadian-born British descent counterparts, there was a higher prevalence of poverty. Also, they found that among the immigrant group highest prevalence was among new wave immigrants and women, respectively. Gustaffson et al. (2009) estimated increases in poverty incidences (based on relative and absolute income poverty) among Swedish pensioners during 1991 to 1998, a timeframe when pensions were being reduced. Lastly, Srivastava and Mohanty (2012) who estimated old age poverty incidences across and within India, found that among the 17.7 million older persons are living in poverty in the nation, the percentage of old age poverty rates varies from 5 to 45 percent from state to state, whereby incidences are higher in states that have overall higher poverty levels in the general population.

The study by MacDonald et al. (2010) used alternative poverty measures to estimate a basic income threshold for a single older person and a couple living in Canada and found that the social protection measures for older persons in Canada (Old Age Security Pension and Guaranteed Income Supplement) would not lift an older person above the basic threshold.

Lastly, Rank and Williams (2010) used a more traditional poverty measures (based on income and assets) to estimate the likelihood of an individual aged 60 to 90 experiencing poverty in the US. They found that almost 50 percent of older Americans will experience, at a minimum, one year of poverty or near poverty across this age range. Also, 58 percent of older Americans between the ages of 60 and 84 "will at some point fail to have enough liquid assets to allow them to weather an unanticipated expense of downturn in income" (p. 337).

Eight of the studies also reported demographic characteristics of older persons who experience a higher prevalence of poverty, which included: women (Butricia et al., 2009; Callander et al., 2012; Jerliu, Toci, Burazeri, & Ramadani, 2012; Kaida & Boyd, 2011; Wang et al., 2011), the widowed (Butricia et al., 2009), the single/unmarried (Rank & Williams, 2010; Wang et al., 2011), those with poor health statuses (Wang et al., 2011), those who are home renters (rather than home owners) (Wallace et al., 2013), the oldest-old (70+) (Callander et al., 2012), those who live in specific locations in Australia (Callander et al., 2012), those with low education levels (Jerliu et al., 2012; Rank & Williams, 2010), and those who live alone (Jerliu et al., 2012), and immigrants (Kaida & Boyd, 2011).

There were contrasting findings regarding urban versus rural residency; two studies (Wang et al., 2011; Srivastava & Mohanty, 2012) reported higher prevalence among the rural residents and one study (Jerliu et al., 2012) reported high incidence among urban dwellers.

Albeit, all three studies were in different contexts: China (Wang et al., 2011), India (Srivastava & Mohanty, 2012) and Kosovo (Jerliu et al., 2012).

There were also different findings regarding ethnicity in two studies conducted in the US; Butricia et al. (2009) reported higher prevalence among the white ethnicity group, whereas Rank and Williams (2010) reported higher prevalence for the black ethnicity group.

Discussion

In addition to providing a broad understanding of the current evidence-based knowledge regarding old age poverty, in this review, we sought to identify gaps in knowledge and offer recommendations for future research, which will be elaborated on in the discussion section.

The most central finding from the review concerning how old age poverty is defined is the overwhelming reliance on traditional measures of poverty, despite a growing trend towards conceptualizing poverty through multiple lenses (United Nations Development Programme [UNDP] & the Oxford Poverty and Human Development Initiative [OPHI], 2016). Traditionally, poverty has been examined and understood through objective and economic-related indicators that include income, consumption, and asset/wealth indicators (Wang et al., 2011). Albeit, within development policy discourse, over the course of two decades, there has been a wider acceptance of poverty as a complex and multi-dimensional phenomenon. For example, in 2010 the UNDP and OPHI created the Multidimensional Poverty Index (MPI) based on the conceptual framework of Amartya Sen's capability approach, which recognizes poverty as a deprivation of substantive freedoms (including basic capabilities) (UNDP & OPHI, 2016).

The MPI measures poverty at the individual (or household) level and complements traditional income (and expenditure) based measures by including three additional dimensions: education, health, and standard of living (UNDP & OPHI, 2016). The instrument has ten indicators and poverty is defined as being deprived of three or more of the indicators. The greater number of deprivations beyond three connotes the severity of poverty. The

indicators for education having a household member who has completed less than six years of schooling and disrupted or stopped school attendance of child (anywhere between years 1-8). Health indicators include: adult or child malnutrition (whereby at least one of two conditions are met: “there is an adult (15 years or older) with the Body Mass Index (BMI) <18.5” and “there is a child, 0-59 months of age, who is shorter for the age (height-for-age z score) according to the WHO standards”) and child mortality (within the last 5 years) (p. 4). There are six indicators for standard of living, whereby the household: cooks with dung, wood, or charcoal; lacks improved sanitation or has improved sanitation (specifically toilets or latrines that flush and are ventilated) but shares it with others; lacks access to safe drinking water or safe drinking water is far (specifically 30 minutes walking distance, roundtrip); has no electricity; has dirt, dung, or sand as floor; does not own more than one modern household asset (which include a radio, TV, telephone, bike, motorbike, refrigerator, and car).

The way in which poverty is defined is critical, as this ultimately shapes who are the poor are, the prevalence of poverty, and how anti-poverty policy and practice interventions are employed. As is evident from this review, there is a great need for more empirical inquiries into the multi-dimensionality and complexity of old age poverty. Specifically, further research should include subjective measures of poverty within their definition. While a few of the studies in the review did integrate self-perceived poverty into their definition, responsiveness to respondents was limited, whereby respondents merely selected their response based on a pre-determined scale.

The review highlights that current literature is dominated by external notions of poverty, as a corrective the perspectives, experiences, ideas, and insights of older persons who have been labeled as the poor need to be engaged (Carr, 2008). The call for “a new narrative which embraces heterogeneity in both our identifications of poverty and our means of measuring that of which we identify as poverty” (p. 730) can be answered by participatory

research approaches and qualitative data collection methods (such as in-depth interviews). Future research on old age poverty should consider integrating such designs and methods.

This review identified several key findings. Firstly, there is sufficient evidence to suggest that social pension has a protective effect for older persons (type one studies) and is correlated with more positive health outcomes among those older persons who are poor (type four studies). While a few studies focused on the comparative effects of different social pension schemes (e.g., universal pension versus means-tested), future research is necessary to determine the most effective mechanism for a social pension. Particularly, there is a need for more evidence-based knowledge in low and lower-middle income countries, in which pension schemes are developing, and such inquiry can inform social pension policy and reform.

Secondly, the findings on gender and old age poverty suggest that women are more likely to experience unfavourable outcomes. In general, women experienced a higher prevalence of poverty (type five studies). Women were more likely to be poor (type one studies), experience negative mental health outcomes (type two studies), and have lower scores in successful ageing (type four studies) compared to their low-income male counterparts. While the type three studies did not necessarily compare women to men, studies of women living alone highlighted the variety of economic, social and cultural challenges they face. Building on some preliminary research, further examination regarding gender and old age poverty should consider the intersectionality of gender with other identities or factors and processes. In this research, there is a need to focus on sub-cohorts of older women, for example, those who are not married, living alone, or have poorer health statuses (including mental health).

Thirdly, there is a paucity of empirical studies that engage older persons living in poverty from a strength-based perspective. Of the type four studies, only one attended to

strengths, rather than the overt focus on “pathology, deficits, problems, abnormality, victimization, and disorder” (Saleeby, 1996, p. 296) as prioritized in the psychological approach. Saleeby describes the strengths perspectives as:

... a different way of looking at individuals, families, and communities. All must be seen in the light of their capacities, talents, competencies, possibilities, visions, values, and hopes, however, dashed and distorted these may have become through circumstance, oppression, and trauma. The strengths approach requires an accounting of what people know and what they can do, however, inchoate that may sometimes seem. It requires composing a roster of resources existing within and around the individual, family, or community. (p. 297)

Importantly this perspective does not encourage researchers to ignore problems, rather it articulates, the need for parallel attention to strengths and assets. As Saleeby (1996) argues, “it is as wrong to deny the possible as it is to deny the problem” (p. 297). Future research needs to investigate both challenges and strengths poor older persons experience to inform interventions that address barriers/issues and capitalize on possibilities.

Fourthly, there is a gap in knowledge concerning how a socio-cultural context influences old age poverty. Albeit, notably, there are only a few studies that either implicitly or explicitly investigated how the socio-cultural context can influence old age poverty, their findings are helpful. For example, South Korean studies by Kim and Cook (2011) and Lee and Lee (2009) found that the socio-cultural norm of familial kin transfers was a significant protective factor against old age poverty. However, future research should attend to the impacts of changing socio-cultural norms in the context of globalization. Adeyanju et al. (2015) provides a more explicit example of how a socio-cultural context can influence old age poverty, in Yenagoa, Nigeria. Traditionally widows remarry their husband's brother, and destitution is likely for those who disobey this norm. Thus, socio-cultural context can be a

powerful influencer of old age poverty – who is or will become poor, how they experience poverty, and what policy/program interventions are instituted. As such, there is a need for future research to explore the role of culture in shaping the dimensions of old age poverty.

Fifthly, most of the studies examined old age poverty, largely, under macro and generalized contexts (e.g., 41 of the 56 studies investigate the phenomenon within a national context – either through a single country or more). As there can be great contextual diversity within a country, further research needs to consider poverty through a particular and localized context, including at the community, city, and province/state level. As Carr (2008) cautions, the “practice of poverty alleviation is greatly limited by a vision of poverty that fails to capture the locally specific causes of and solutions to the challenges that threaten human well-being” (p. 726). He also clarifies that it is not an either/or paradigm, where national understandings of poverty should be abandoned, but rather poverty needs to be understood through both generalized and particular contexts.

Sixth and lastly, connected to the issue of examining old age poverty primarily through generalized contexts, is the lack of real-world and applied research. As Mead’s (2012) advocates:

Researchers need to change their view of poverty and their research methods....

[Further], that research methods should become more realistic. The typical poverty researcher is a statistician who builds models of some aspect of poverty using data from surveys of the low-income population. Scholars operate from behind their computers and have little hands-on contact with the relevant [anti-poverty] programs.

(p. 543)

This scoping literature concurs with Mead (2012) in that there is a lack of real-world applied empirical research on old age poverty. Evaluation research of real-world examples of anti-poverty programs, policies, and, practices geared toward the older population, is one such

example. Evaluation research that engages the perspective and ideas of the end-users is especially critical to understanding how and why policies, programs, and practices fail to or succeed in addressing various problems associated with poverty. Such inquiries would involve field-based research and may include both subjective and objective measures of poverty.

When interpreting the findings of this review, there are several limitations that need to be considered. Firstly, only three social sciences-based databases (*Abstracts in Social Gerontology*, *Social Services Abstract*, and *Social Work Abstracts*) were searched, which both limited the number of references included in this review and excluded more specialized or non-social sciences-based databases (e.g., *Economist Historical Archive* and *PubMed*) that may have identified different aspects of old age poverty. Secondly, the review included only English language articles, thus prioritizing high-income countries and those within Western or Euro-centric contexts and potentially eliminating studies which could contribute more to a multi-contextual and dimensional understanding of poverty, especially in regards to the socio-cultural diversity (Kwan & Walsh, 2017). Thirdly, since studies were not excluded based on their methodology, certain decisions had to be made on the relevant data to extract which necessarily reduced the richness, complexity, and thickness of the findings (Weeks & Strudsholm, 2008). Fourthly, and lastly, there was a variance in the sample (via the age of older persons, sample size, and the focus on specific sub-cohorts, such as immigrants) that makes inter-study comparisons difficult (Kwan & Walsh, 2017).

Conclusion

The eradication of poverty continues to be a key priority for policy and decision makers worldwide (United Nations General Assembly, 2014). Parallel to the drive towards ending poverty, is the growing older population, worldwide. Thus, understanding old age poverty needs to be an essential part of anti-poverty policies, programs, and practices.

Researchers have an essential role to play in contributing to the evidence base necessary to inform such interventions. In conducting this review, we hope to contribute to such a knowledge base by mapping out the current literature on old age poverty.

In summary, we found that there were four ways in which old age poverty was defined (by income and consumption measures, assets or wealth-based measures, self-perceived poverty, and a general category of other measures, which included socio-economic status, health status, and residency, amongst others). This review identified that the studies included had a number of main objectives including exploring the risk and protective factors and processes of old age poverty; examining how poverty affects other factors and processes; understanding the challenges or strengths of older persons living in poverty; investigating how one (or more) factor(s) or process(es) influence each other for older people living in poverty; and estimating poverty rates, old age poverty thresholds, and/or the likelihood of experiencing old age poverty. In addition to identifying gaps in the literature regarding old age poverty, we suggest recommendations for future research. Overall, the findings of this review caution that the movement towards poverty eradication, must not ignore an important (and growing) population – older persons.

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ACCEPTED MANUSCRIPT

Public Interest Statement

The eradication of poverty continues to be a priority for policymakers worldwide. At the same time trends in population aging results in a strong need to understand and address poverty in the later life years. While the literature on poverty is vast, the specific focus on old age poverty is limited. Research has an important role to play to this end, by building a strong empirical base to inform age-inclusive poverty alleviation policies, programs and practices. The purpose of this review is to map out current empirical research on old age poverty, delineate knowledge gaps, and provide recommendations for future research.

ACCEPTED MANUSCRIPT

Crystal Kwan

Crystal Kwan is a PhD candidate with the Faculty of Social Work, University of Calgary. Her doctoral study is focused on exploring and understanding seniors' resilience within the context of disasters. Old age poverty is intertwined with my dissertation topic as disasters exacerbate broader development problems, such as poverty. Anti-poverty interventions are in essence resilience-building efforts that bolster the capacity of older people to mitigate, prepare, recover and rebuild from the impacts of disasters.

Christine A. Walsh

Christine Walsh, is Professor and Associate Dean (Research and Partnerships) Faculty of Social Work, University of Calgary. In her arts-based, action oriented research she partners with marginalized, disadvantaged populations communities, including older adults impacted by poverty and homelessness, to improve their well-being and promote social justice.

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Table 1
Descriptive Characteristics of Studies

	Location	Author(s); Year	Methodology	Sample Size; Age
Single Country Studies (n=35)	Australia	Callander, Schofield, & Shrestha, 2012	Quantitative (cross-sectional survey using the Survey of Disability, Ageing, and Carers (SDAC))	N=2,219,000 (65+)
	Belgium	Peeters, Debels, & Verpoorten, 2013	Quantitative (cross-sectional survey using the Belgian Labour Market and Social Protection Data warehouse)	N=9,871 (65+)
	Belgium	Peeters & Wouter, 2015	Quantitative (cross-sectional survey using the Belgian Data warehouse Labour Market and Social Protection)	N=9,871 (65+)
	Britain	Berthoud, Blekesaune, & Hancock, 2009	Quantitative (cross-sectional survey using the British Household Panel Survey)	N=3,726 (50+)
	Canada	Kaida & Boyd, 2011	Quantitative (cross-sectional survey using the Canadian Census of Population)	N= 72,925 (70+)
	Canada	MacDonald, Andrews, & Brown, 2010	Quantitative (cross-sectional survey using the Canadian Census, Survey of Household Spending (SHS), Labour Force Survey (LFS), Participation and Activity Limitation Survey (PALS))	N=authors did not report the sample size (65+)
	Costa Rica	Brenes-Camacho, 2011	Quantitative (cross-sectional survey using the Costa Rican Study on Longevity and Healthy Aging)	N=1,556 (60+)

India	Srivastava & Mohanty, 2012	Quantitative (cross-sectional survey using the National Sample Survey)	<i>N</i> =62, 000, 000 (60+)
Kosovo	Jerliu, Toci, Burazeri, Ramandani, & Brand, 2012	Quantitative (cross-sectional survey using own survey)	<i>N</i> =1,890 (65+)
Peru	Olivera & Tournier, 2016	Quantitative (cross-sectional survey using the Encuesta de Dalud y Bienestar del Audlto Mayor (ESBAM) survey)	<i>N</i> =4,151 (65+)
South Korea	Chung & Park, 2008	Quantitative (cross-sectional survey using own survey)	<i>N</i> =220 (65+)
South Korea	Jeon, Noguchi, Kwon, Ito, & Tamiya, 2016	Quantitative (cross-sectional survey using the Korea Welfare Panel Study)	<i>N</i> =40,365 (65+)
South Korea	Kim & Cook, 2011	Quantitative (cross-sectional survey using the Korean Longitudinal Study of Ageing)	<i>N</i> =3,981 (65+)
South Korea	Lee & Lee, 2009	Quantitative (cross-sectional survey using the Korean Longitudinal Study of Ageing)	<i>N</i> =4,155 (65+)
South Korea	Yang, 2011	Quantitative (cross-sectional survey using the Korean Labour and Income Panel Study)	<i>N</i> =580 (50+)
Sweden	Gustafsson, Johansson, & Palmer, 2009	Quantitative (cross-sectional survey using the Swedish Household Income Survey aka HINK/HEK)	<i>N</i> =varies between 10,000 to 19,000 (65+)a
United States (US)	Butrica, Murphy, & Zedlewski, 2009	Quantitative (cross-sectional survey using the Health and Retirement Survey)	<i>N</i> =7,883 (65+)

US	Chen et al., 2016	Quantitative (cross-sectional survey using the National Social Life, Health, and Aging Project (NSHAP))	<i>N</i> = 780 and 524b (55+)
US	Chi & Tucker-Seeley, 2013	Quantitative (cross-sectional survey using the Health and Retirement Study)	<i>N</i> =1,359 (50+)
US	Hutto, Waldfogel, Kaushal, & Garfinkel, 2011	Quantitative (cross-sectional survey using the Consumer Expenditure Survey CEX)	<i>N</i> =55,897 (65+)
US	Johnson, Schoeni, & Rogowski, 2011	Quantitative (cross-sectional survey using the Panel Study of Income Dynamics (PSID))	<i>N</i> =2,730 (55+)
US	Kim & Frank-Miller, 2015	Quantitative (cross-sectional survey using the Health Retirement Study)	<i>N</i> =3,770 (65+)
US	Kim, Richardson, Park & Park, 2013	Quantitative (cross-sectional survey using the Health and Retirement Study)	<i>N</i> = 2,614 (65+)
US	Kim & Richardson, 2014	Quantitative (cross-sectional survey using the Medical Expenditure Panel Survey)	<i>N</i> =1,773 (65+)
US	Kietzman et al., 2012	Qualitative (grounded theory using interviews)	<i>N</i> =33 (65+)
US	Lee, Hong, & Harm, 2014	Quantitative (cross-sectional survey using the American Community Survey)	<i>N</i> =3,820 (65+)
US	Lee & Yoon, 2011	Quantitative (cross-sectional survey using own survey)	<i>N</i> =206 (65+)
US	Louie & Ward, 2011	Quantitative (cross-sectional survey using the Third National Health and Nutrition Examination	<i>N</i> =5,556 (60+)

Survey)

US	Nicholas & Wiseman, 2009	Quantitative (cross-sectional survey using the Current Population Survey's Annual Social and Economic Supplement and other social security administrative files)	<i>N</i> =varies between 11,880 to 13,957c (65+)
US	Park, Han, Kim, & Dunkle, 2017	Quantitative (cross-sectional survey using the Health Retirement Study)	<i>N</i> =2,666 (75+)
US	Phua, McNally, & Park, 2007	Quantitative (cross-sectional survey using the US Census)	<i>N</i> =49,091 (60+)
US	Rank & Williams, 2010	Quantitative (cross-sectional survey using the Panel Study of Income Dynamics)	<i>N</i> =authors did not report the sample size (60+)
US	Sachs-Ericsson, Corsentino, & Cogle, 2009	Quantitative (cross-sectional survey using the Hispanic-Epidemiological Population Studies of the Elderly)	<i>N</i> =1,964 (65+)
US	Whiltshire, Roberts, Brown, & Sarto, 2009	Quantitative (Household Component of the Community Tracking Study)	<i>N</i> =12,784 (55+)
US	Wight, Cummings, Miller-Martinez, Karlamangla, Seeman & Aneshensel, 2008	Quantitative (cross-sectional survey using the Asset and Health Dynamics Among the Oldest Old (AHEAD) and US Census)	<i>N</i> =3,443 (70+)

	Vietnam	Long & Pfau, 2009	Quantitative (cross-sectional survey using the Vietnam Household Living Standard Survey)	<i>N</i> =3,806 (60+)
Cross-country Comparisons (<i>n</i> =6)	South Korea and Taiwan	Choi & Kim, 2010	Quantitative (cross-sectional survey using the Luxembourg Income Survey for Taiwan and the National Survey of Household Income and Expenditure and Household Income and Expenditure Survey for South Korea)	<i>N</i> =authors did not report sample size (65+)
	Europe (12 countries)	Adena & Myck, 2014	Quantitative (cross-sectional survey using the Health, Ageing and Retirement in Europe (SHARE))	<i>N</i> =varies from 564 to 2,045 dependent on the country (50+)d
	Europe (10 European Union countries)	DeWilde & Raeymaeders, 2008	Quantitative (cross-sectional survey using the European Community Household Panel (ECHP))	<i>N</i> =16,508 (65+)
	Europe (15 countries)	van Vliet, Been, Caminada, & Goudswaard, 2012	Quantitative (cross-sectional survey using the OECD Social Expenditure Database)	<i>N</i> =authors did not report sample sizes (65+)
	Sub-Saharan Africa (15 countries)	Kakwani & Subbarao, 2007	Quantitative (cross-sectional survey using the Household Survey Information from World Bank)	<i>N</i> =3.5 to 7 percent of population depending on country (60+)e
	22 Countries (various regions)	Tai & Treas, 2009	Quantitative (cross-sectional survey using the Luxembourg Income Survey)	<i>N</i> =83,244 (65+)
Studies at the Local Level (<i>n</i> =14)	Cambodia (rural regions)	Zimmer, 2008	Quantitative (cross-sectional survey using the Survey of the Elderly)	<i>N</i> =1,011 (60+)

China (rural regions)	Wang, Shang, & Xu, 2011	Quantitative (cross-sectional survey using the China Health and Nutrition Survey)	<i>N</i> =2,344 (60+)
Canada (Metro Vancouver)	Engel, Chudyk, Ashe, McKay, Whitehurst, & Bryan, 2016	Quantitative (cross-sectional survey using the Walk the Talk Study)	<i>N</i> =160 (65+)
Canada (city of St. John)	Ryser & Halseth, 2011a	Mixed-methods (cross-sectional using own survey and focus groups)f	<i>N</i> =277 (65+)
Canada (city of St. John)	Ryser & Halseth, 2011b	Mixed-methods (cross-sectional using own survey and focus groups)g	<i>N</i> =277 (65+)
Lebanon (specific communities)	Chaaya, Sibai, Tabbal, Chemaitelly, Roueiheb, & Slim, 2010	Quantitative (cross-sectional survey using the Urban Health Study)	<i>N</i> =320 (60+)
Lebanon (specific communities)	Hazzouri, Sibai, Chaaya, Mahfoud, & Yount, 2011	Quantitative (cross-sectional survey using the Urban Health Study)	<i>N</i> =740 (60+)
Nigeria (town of Yenagoa)	Adeyanju, Onasoga, & Edoni, 2015	Qualitative (content analysis using interviews)	<i>N</i> =13 (60+)
Thailand (province of Chai Nat)	Gray, Rukumnuaykit, Kittisuksathit, & Thongthai, 2008	Quantitative (cross-sectional survey using their own survey)	<i>N</i> =1,036 (55+)
US (state of Wisconsin)	Chung, Issacs, & Smeeding, 2013	Quantitative (cross-sectional survey using the American Community Survey and Wisconsin Administrative data)	<i>N</i> =approximately 60,000 each year (65+)h
US (state of Florida)	Ko, Jang, Park, Rhew, & Chiriboga, 2014	Quantitative (cross-sectional survey using the Survey of Older Floridians and the US Census)	<i>N</i> =1,382 (65+)
US (city of Detroit)	Onolemhemen, 2009	Qualitative (phenomenology using interviews)	<i>N</i> =15 (60+)

US (state of Rhode Island)	Plow, Allen, & Resnik, 2011	Quantitative (cross-sectional survey using own survey)	N=490 (65+)
US (state of California)	Wallace, Padilla-Frausto, & Smith, 2013	Quantitative (cross-sectional survey using the American Community Survey)	N=authors did not report sample size (65+)

Note. aStudy used annual surveys from 1991 to 2004 and also from 1975 to 1980. bStudy used surveys from two waves of data: 2005-2006 and 2010-2011. cStudy used annual surveys from 2002-2005. dStudy reported a different sample size for every country. eStudy did not report sample size for the country but rather a percentage range. fThis study is the same as Ryser and Halseth 2011b, and reports on both quantitative and qualitative findings on one dimension of the study. gThis study is the same as Ryser and Halseth 2011a, and reports on only the quantitative findings on another dimension of the study. hStudy used annual surveys from 2008-2010.

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Table 2

Poverty Measures in Studies

Author(s); Year	Income and consumption	Assets/wealth	Self-perceived poverty	Other
Brenes-Camacho, 2011	x			
Chen et al., 2016	x			
Chi & Tucker-Seeley, 2013	x			
Choi & Kim, 2010	x			
Chung et al., 2013	x			
Chung & Park, 2008	x			
Engel et al., 2016	x			
Gustafsson et al., 2009	x			
Jeon et al., 2016	x			
Johnson et al., 2011	x			
Kaida & Boyd, 2011	x			
Kakwani & Subbarao, 2007	x			
Kietzman et al., 2012	x			
Kim & Miller, 2015	x			
Kim & Richardson, 2014	x			
Kim et al., 2013	x			
Ko et al., 2014	x			
Lee & Lee, 2009	x			
Lee et al., 2014	x			
Lee & Yoon, 2011	x			
Long & Pfu, 2009	x			
Louie & Ward, 2011	x			
MacDonald et al., 2010	x			
Nicholas & Wiseman, 2009	x			
Onolemhemen, 2009	x			
Park et al., 2017	x			
Peeters et al., 2013	x			
Phua et al., 2007	x			
Plow et al., 2011	x			
Ryser & Halseth, 2011a	x			
Ryser & Halseth, 2011b	x			
Sachs-Ericsson et al., 2009	x			
Srivastava & Mohanty, 2012	x			
Tai & Treas, 2009	x			

van Vliet et al., 2012	x				
Wallace et al., 2013	x				
Whiltshire et al., 2009	x				
Yang, 2011	x				
Gray et al., 2008				x	
Jerliu et al., 2012				x	
Adeyanju et al., 2015					x
Chaaya et al., 2010					x
Hazzouri et al., 2011					x
Zimmer, 2008					x
Adena & Myck, 2014	x	x		x	
Berthoud et al., 2009	x	x		x	
Butrica et al., 2009	x	x			
Callander et al., 2012	x				x
DeWilde & Raeymaeders, 2008	x			x	
Hutto et al., 2011	x	x			
Kim & Cook, 2011	x	x			
Olivera & Tournier, 2016	x	x			
Peeters & Wouter, 2015	x	x			
Rank & Williams, 2010	x	x			
Wang et al., 2011	x			x	
Wight et al., 2008	x				x

Table 3

Main Objective(s) in Studies

Author(s); Year	Type 1	Type 2	Type 3	Type 4	Type 5
Berthoud et al., 2009	x				
Choi & Kim, 2010	x				
DeWilde & Raeymaeckers, 2008	x				
Kakwani & Subbarao, 2007	x				
Kim & Cook, 2011	x				
Lee & Lee, 2009	x				
Lee et al., 2014	x				
Long & Pfu, 2009	x				
Peeters & Wouter, 2015	x				
Phua et al., 2007	x				
Tai & Treas, 2009	x				
van Vliet et al., 2012	x				
Yang, 2011	x				
Adena & Myck, 2014		x			
Chi & Tucker-Seeley, 2013		x			
Gray et al., 2008		x			
Johnson et al., 2011		x			
Kim & Richardson, 2014		x			
Kim et al., 2013		x			
Ko et al., 2014		x			
Louie & Ward, 2011		x			
Sachs-Ericsson et al., 2009		x			
Whiltshire et al., 2009		x			
Wight et al., 2008		x			
Adeyanju et al., 2015			x		
Keitzman et al., 2012			x		
Onolemhemen, 2009			x		
Plow et al., 2011			x		
Ryser & Halseth, 2011a			x		
Ryser & Halseth, 2011b			x		
Brenes-Camacho, 2011				x	
Chaaya et al., 2010				x	
Chen et al., 2016				x	
Chung & Park, 2008				x	
Engel et al., 2016				x	
Hazzouri et al., 2011				x	
Jeon et al., 2016				x	

Kim & Frank-Miller, 2015	x	
Lee & Yoon, 2011	x	
Olivera & Tournier, 2016	x	
Park et al., 2017	x	
Zimmer, 2008	x	
Butrica et al., 2009		x
Callander et al., 2012		x
Chung et al., 2013		x
Gustafsson et al., 2009		x
Hutto et al., 2011		x
Jerliu et al., 2012		x
Kaida & Boyd, 2011		x
MacDonald et al., 2010		x
Nicholas & Wiseman, 2009		x
Peeters et al., 2013		x
Rank & Williams, 2010		x
Srivastava & Mohanty, 2012		x
Wallace et al., 2013		x
Wang et al., 2011		x
