Deprivation within Affluence: A Systematic Review of Multidimensional Poverty in Developed Economies

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Introduction

The 2030 Agenda for Sustainable Development underscores the urgent need to address poverty as a multidimensional issue that limits human capabilities (United Nations Development Programme, 2023). A multidimensional approach to poverty is essential because it recognizes that poverty is not solely defined by financial resources but encompasses a range of interrelated factors that affect individuals' lives (Townsend, 1979). Financial deprivation restricts access to critical resources such as education and healthcare, thereby limiting opportunities for social and economic participation (Sen, 1999). This framework acknowledges that deprivation in multiple domains collectively impedes consumers' capability to lead fulfilling and meaningful lives (Nam, 2020). The absence of basic resources necessary for a decent standard of living creates barriers to access, participation, and opportunity for individuals and communities beyond financial constraints (Dhongde & Haveman, 2022). These barriers manifest as the multidimensionality of poverty—a state of deprivation that fails to provide conditions for a decent life.

By examining poverty through the lens of multidimensionality, we can more accurately capture the complex realities and diverse needs of marginalized populations. A comprehensive understanding of the various deprivations that constrain human well-being can help advance social equity and improve overall quality of life (Sen, 1999). Traditionally, poverty has been addressed through the concept of absolute deprivation, a framework that falls short of capturing the nuances of inequality of opportunity and exclusion present in developed societies (Townsend, 1979). Acknowledging the multifaceted nature of deprivation allows for a more sophisticated approach to addressing the challenges faced by marginalized groups. To this end, a nuanced understanding of relative deprivation, grounded in the specific characteristics and conditions of each society, is essential. This study aims to synthesize existing research on multidimensional poverty (MDP) by providing a systematic review of prior studies and findings. Particularly, it will highlight the various dimensions of deprivation that contribute to social exclusion in developed countries, offering a foundation for understanding consumer quality of life in societies that, while prosperous and meeting basic survival needs, still grapple with complex and entrenched inequalities. This process enables researchers to identify how to determine the multidimensional and aggravated deprivation in developed societies, facilitating a more refined understanding of how multiple factors intersect to shape individuals' lives.

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Methods

Article selection process

We conducted a systematic review, a well-structured review approach that addresses a clearly specified question by delineating the findings of all relevant studies (Chanphati & Thosuwanchot, 2023). One of its distinct benefits is to "limit bias with the use of a reproducible scientific process to search the literature and evaluate the quality of the individual studies" (Crowther et al., 2010, p. 3140).

In order to identify the relevant articles, Scopus and Web of Science, which are appropriate journal-quality databases for systematic literature review (Paul et al., 2021), were searched. Keywords were selected based on the scope of the review and included the following terms: "multidimensional poverty" and "developed country." The keyword search was done on the title, abstract, and keywords of journal articles. This process yielded 823 of English-written articles.

The identified articles were filtered through two procedures. First, in accordance with the purpose of this study, the articles that do not include the countries classified as developed countries based on UNCTAD or as high-income countries based on the World Bank were eliminated. The remaining 123 articles were further filtered according to the three conditions: 1) articles that claim to use MDP but actually have fewer than three dimensions of poverty; 2) articles of which the original document cannot be downloaded; 3) articles that only propose a new calculation method for the weights of the MDP indicators. The aforementioned procedure resulted in a total of 86 articles to be analyzed.

Analysis framework

To present our systematic review findings, we follow the TCCM framework (Paul & Rosado-Serrano, 2019), which presents the widely used theories (T), contexts (C), characteristics (C), and methodology (M) in research. This framework explains the theoretical and empirical facets of a research domain, being an effective tool for a comprehensive understanding of a given area of research (Shahab, Ghazali, & Mohtar, 2021; Paul & Rosado-Serrano, 2019). It was adopted to thoroughly analyzed the MDP in developed countries because the framework has overcome the limitations of narrow domain-based, theory-based, or method-based systematic reviews (Chen, Mandler, Meyer-Waarden, 2021).

Figure 1 demonstrates the article selection process and TCCM framework adopted in this study.

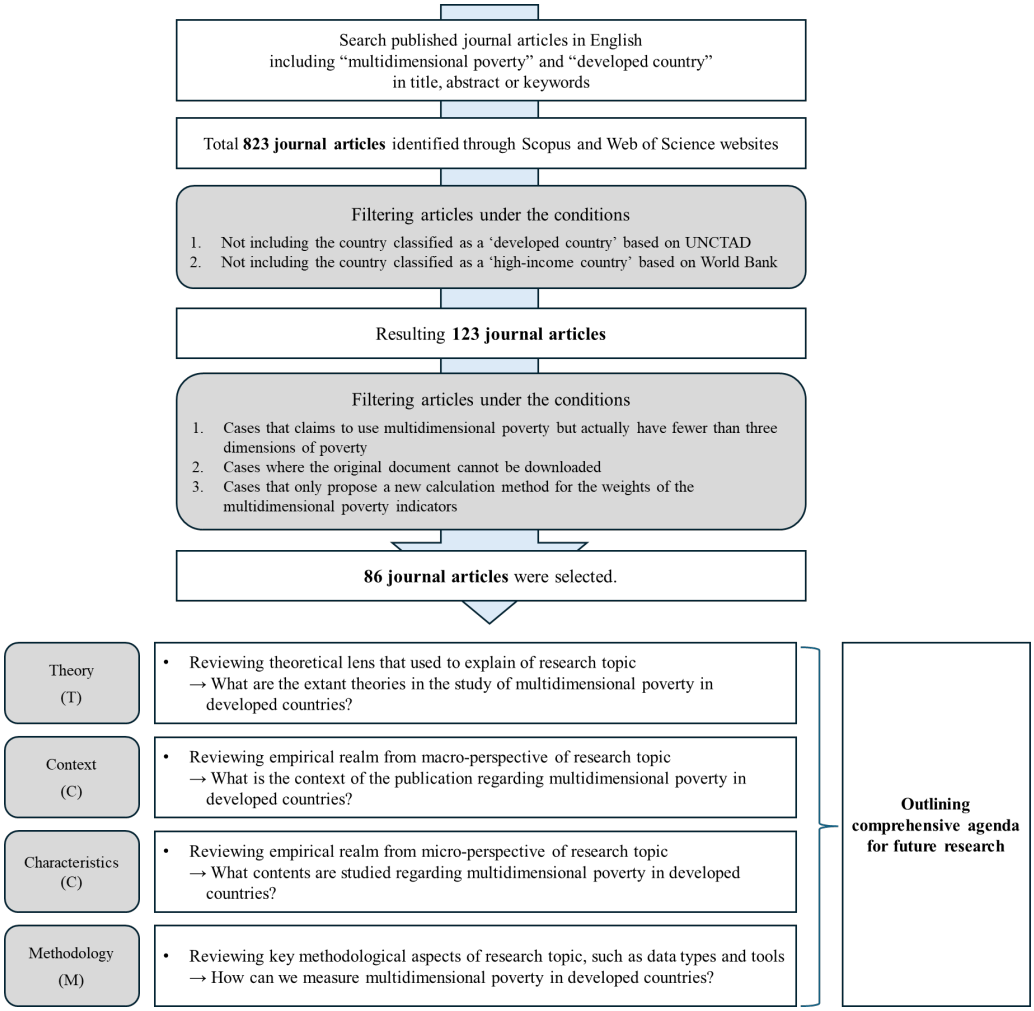

Figure 1. Article selection process and TCCM framework

Results

Theory: What are the extant theories in the study of MDP?

The analysis of MDP in developed countries reveals that researchers have used specific frameworks: the works by Amartya Sen (*n*=36, 51.43%) and Alkire and Foster (*n*=10, 14.29%). Sen argues that poverty should not be defined merely as a lack of income but rather as a deprivation of capabilities—the inability to achieve essential functioning, implying that people who have sufficient income may still experience poverty if they lack access to education, healthcare, or political participation (Sen, 1999). A variety of MDP in developed countries adopted this approach to set their foundational perspective toward poverty (e.g., Callander, Schofield, Shrestha, 2012; Wagle, 2014).

Furthermore, several research reveals that their theoretical framework was from Alkire and Foster (2007; 2011); however, it has been based on Sen's capability approach. This demonstrates that the capability approach has dominated the research on MDP in developed countries.

Context: What is the context of the publication regarding MDP?

Journal

The journal that published the most research on MDP in developed countries was *Social Indicators Research* (*n*=24, 26.74%), followed *by Child Indicators Research* (*n*=4, 4.65%), *PloS one*

(*n*=3, 3.49%), *Asia Pacific Journal of Social Work and Development* (*n*=2, 2.33%), *Review of Income and Wealth* (*n*=2, 2.33%), *Social Science Research* (*n*=2, 2.33%), and *Sustainability* (*n*=2, 2.33%). Consequently, the majority of papers were found to be published in journals that focused on the measurement of well-being and quality of life. Especially, the articles published by *Social Indicators Research* included topics regarding poverty level survey (e.g., Mitra et al., 2013; Vick, 2020), use for poverty classification (e.g., Mishra, Ray, Risse, 2018), and cross-country comparison (e.g., Herranz Aguayo et al., 2016).

Year

Traditionally, poverty has been a topic of interest primarily in the context of developing countries, where basic needs such as food, clean water, and shelter are often unmet. However, as shown in Figure 2, an interest in MDP has grown in developed countries. This shift underlines that not only the satisfaction of a minimum standard of living but also the quality of activities such as family activities, recreation time, and social relations should be considered (Martinez & Perales, 2017). Furthermore, the Great Recession in 2008 and the economic disruptions caused by the COVID-19 pandemic have exacerbated poverty and inequality in developed countries such as the US (Dhongde & Haveman, 2012), highlighting the need for more concrete research focusing on those countries.

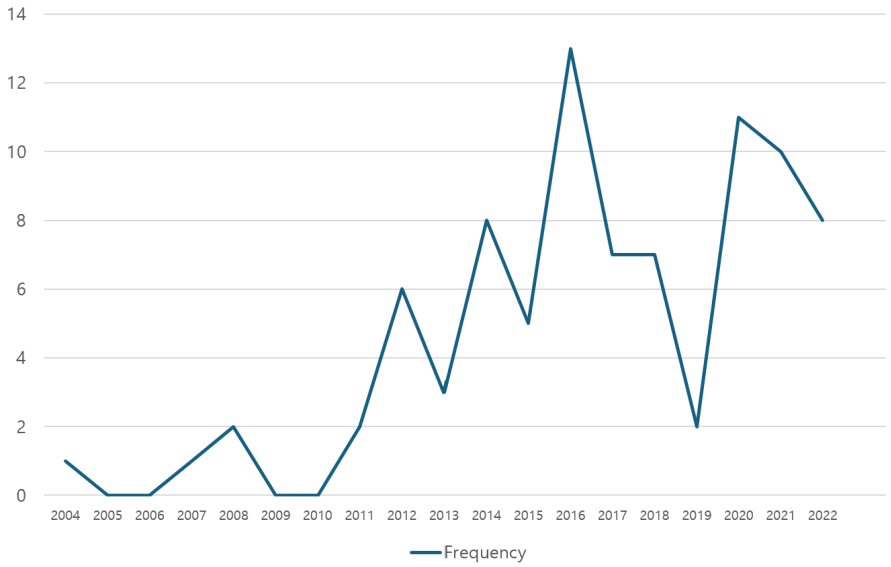

Figure 2. Number of articles by year

Country

In terms of countries, Australia was the most frequently researched country (*n*=20, 14.18%), followed by the UK (*n*=12, 8.51%), Germany (*n*=11, 7.80%), the US (*n*=10, 7.10%), and South Korea (*n*=9, 6.38%). Researchers including Callander E. J. and Saikia, U. have led the studies on MDP in Australia. Specifically, Callander E. J. utilized the Freedom Poverty Measure, drawing on Sen's capability approach, and used three indices to scale poverty: income, health, and education. Callander and her colleagues have conducted various studies such as comparing poverty levels across regions (Callander, Schofield, Shrestha, 2012) and examining the impact of asthma on MPI (Callander & Schofield, 2015). On the other hand, studies in other countries exploratorily examined the poverty, highlighting the need for further depth and expansion in research scope.

Population

In studies on MPI, the target population is often not clearly defined (*n*=50, 58.14%). In other studies that do specify, the population typically includes adults aged 15 or 19 to under 65 (*n*=13,

15.12%). Research on children and adolescents accounted for a small proportion (*n*=11, 12.79%), focusing primarily on developmental and growth-related subdimensions such as education (e.g., outdoor activities, early childhood education and care, educational resources), health (e.g., overweight), and nutrition (e.g., food insufficiency, meals with fresh fruits and vegetables) (e.g., Wüst & Volkert, 2012; Chzhen et al., 2016; Leu, Chen, Chen, 2016). The remaining population groups included specific cohorts like patients (e.g., Boyer et al., 2014), women (e.g., Nam, 2020), and individuals with disabilities (e.g., Park and Nam, 2020).

In studies on developed countries where income levels are relatively high and assets and infrastructure are well-established, it is more necessary to focus on specific populations rather than examining samples across all age groups. Especially, considering that there may be a blind spot for welfare in the developed countries, poverty levels and dynamics should vary accordingly (Alkire, Roche, Vas, 2015). Thus, it is crucial to analyze poverty patterns by subgroup to better capture these distinctions.

Characteristics: What contents are studied regarding MDP?

Articles regarding MDP in developed countries can be classified into two categories according to the contents of the research: the ones examining antecedents and outcomes of poverty (*n*=34) and the others studying research questions (*n*=57).

Antecedents and outcomes of MDP in developed countries (n=34)

Among the research studying the variables that have causal relationships with MDP, literature has relatively focused on revealing the relationships between MDP and its antecedents including the variables as follows: demographics (*n*=15: age, marital status, education, household size, gender, lack of English proficiency), physical health (*n*=6: disease, self-rated health, current smoking), socio-economic variables (*n*=5: household income, employment status), emergency events (*n*=4: COVID-19, natural disaster), mental health (*n*=3: psychological distress), housing (*n*=3: rent, length of residency), surroundings (*n*=3: rural location of household), and national economic status (*n*=2: growth rate, service-to-manufacturing ratio).

On the other hand, outcomes of MDP have been focused on physical (*n*=36: habit, self-rated health, physical activity) and mental health (*n*=5: self-efficacy, anxiety, perceived happiness). Interestingly, only one article has studied a variable that represents life satisfaction or quality of life (Baumstarck et al., 2015).

Research questions regarding MDP in developed countries (n=57)

Among the articles that examine research questions regarding MDP in developed countries, research on poverty-level survey (*n*=21, 36.84%) and indicator calculation improvement (*n*=10, 17.54%) have occupied a major proportion. Research on poverty-level surveys identified the poverty status of a specific country or region (e.g., Callander et al., 2012), and those on indicator calculation improvement focused on reforming the calculation of poverty indicators to determine MDP status (e.g., Liberti, Resce, Tosi, 2022). In addition, six articles classified into poverty and non-poverty groups and compare the two groups (e.g., Mishra et al., 2018). Four articles identified the relationships between sub-dimensions of poverty (e.g., Wüst & Volkert, 2012), and another four articles compared poverty levels across multiple countries (e.g., Chzhen et al., 2016). Other topics included poverty trend survey (e.g., Dhongde & Haveman, 2022), development of new indicators (e.g., Alkire & Foster, 2007), and poverty threshold adjustment (e.g., García-Pérez, González-González, & Prieto-Alaiz, 2017). Given these results, research on MDP is still at a foundational stage, focusing primarily on establishing and solidifying its conceptual framework.

Methodology: How can we measure MDP?

Data and indicator basis

In terms of data, analyzing secondary datum was dominated. Especially, The Household

Income and Labour Dynamics in Australia (HILDA) survey—associated with the Callander and her colleagues' studies—was the data that mostly used (*n*=13, 15.12%). Research studied MDP in European countries utilized EU statistics on income and living conditions (EU-SILC) (*n*=10, 11.63%). However, studies that solely examined Germany used German Socio-Economic Panel (*n*=6, 6.98%). Similarly, studies including South Korea analyzed data collected in Korea (i.e., Korea Welfare Panel Study) (*n*=6, 6.98%). While these national surveys provide valuable, representative data, their fixed indicators often limit flexibility. This highlights the importance of ongoing research input to establish more comprehensive, MDP standards at the national level.

In terms of indicator basis, one from Alkire and Foster (2011) was mostly used (*n*=18, 20.93), followed by Callander et al. (2012; 2013) (*n*=15, 17.44%). Alkire and Foster (2011) and Callander et al. (2011; 2012) considered income, health (i.e., self-reported health status, chronic illness), and education (i.e., education achievement, education participation) as subdimensions of MDP.

Subdimensions of MDP

In order to examine the studied indicators of MDP, they were listed and grouped according to each meaning. After scrutinizing the and organizing the subdimensions of MDP, twelve subdimensions were found as Table 1. Subdimensions other than the ones that studied frequently through literature such as education, surroundings, health, and employment, noticeable subdimensions—information and personal empowerment—were revealed. It shows that instead of unified indicators, enormous subdimensions are addressed sporadically.

Table 1. S*ubdimensions of multidimensional poverty*

Main category	Secondary category	Tertiary category	Main category	Secondary category	Tertiary category
Education	Inherited ability	Natural ability	Wealth	Material asset	Equipment
	Educational outcome	Language proficiency			Home appliance
		Knowledge		Financial asset	Debt
		Work ability			Financial satisfaction
		Educational achievement			Financial situation
	Resource	Access to school			Income
		Educational activity			Management ability
		Educational tools			Savings
		School attendance			Social security
Surroundings	Environment	Air quality	Relationships	Feeling	Bullying
		Dirty street			Membership
		Noise			Relationship satisfaction
		Pollution		Status	Reputation
		Oder		Behavior	Social engagement
	Neighborhood	Convenience			Voluntary
		Crime		Support	Social support
Housing	Condition	Basic services	Health	Condition	Body
		Overcrowding			Disability
		Shelter			Physical health
		Floor			Mental health
		Leak			Health satisfaction
		Light			Incapacity
		Heat		Management resource	Health management ability
		Comfort			Healthcare access
		Wall		Management behavior	Habit
		Housing satisfaction			Workout
	Housing cost	Housing fee	Leisure	Recreational activity	
		Lease		Leisure	
	Housing type	Housing type		Vacation	
Employment	Employment situation	Employment status	Personal empowerment	Autonomy	
		Occupation		Equal treatment	
		Job stability		Self-esteem	
	Labor satisfaction	Number of workers		Political activity	
		Job satisfaction	Necessity	Nutrition	Malnutrition
		Working hours			Unbalanced meal
Transportation	Car			Sanitation	Sewage
					Drinking water
	Public transportation			Cloth	
			Information	Internet connection	Devices
					Internet

Discussion

Our review revealed that research on MDP has been largely inspired by the foundational

work of Amartya Sen, and an increasing number of studies have been published in the last two decades. These studies have been conducted in various developed countries, notably Australia, UK, Germany, US, and South Korea—countries that regularly conduct nationally representative household surveys with rich data on poverty's subdimensions. In terms of sample characteristics, most studies focused on pre-retirement adults, with only a few addressing at-risk populations, including individuals with disabilities, older adults, and young children. The existing studies used the concept of MDP to assess the overall poverty level within a country or region or to identify vulnerable population groups. This underscores the necessity of targeting specific population because there may be dynamics of MDP in the developed countries due to their well-structured social security system.

Some studies examined the relationships among subdimensions of m MDP or conducted cross-country comparisons using the MDP index. Most importantly, our review identified twelve major dimensions of MDP (education, health, personal empowerment, employment, wealth, transportation, surroundings, housing, relationships, leisure, necessities, and information) along with associated subdomains. This categorization includes economic dimensions such as employment, wealth, and housing, which are commonly recognized as poverty subdimensions in developing countries, as well as non-economic factors like relationships and personal empowerment, which are more relevant in the context of developed economies.

A noteworthy finding is that the subdimensions of poverty in developed countries are not much different from those in developing countries. Although we identified certain non-economic dimensions specific to the context of developed countries, these dimensions largely align with what is already understood about the general components of poverty. In essence, the subdimensions found—such as housing, employment, and relationships—do not extend beyond the established framework of MDP. While some dimensions reflect the socioeconomic conditions of wealthier nations, the core aspects of poverty remain consistent across different economic settings. This suggests that, while developed countries may experience poverty with unique characteristics, the foundational elements of poverty are broadly similar regardless of a country's development status. In addition, only Australia has been researched broadly, underlining the need for in-depth and various research in other developed countries.

In the existing literature, mental health is sometimes considered a subdimension of poverty (Vick, 2020), while in other cases, it is treated as an outcome of poverty (Callander & Schofield, 2015). However, based on our systematic review, it appears more appropriate to consider mental health as a subdimension of poverty in developed countries. Mental illness often acts as a barrier to escaping poverty, as it can impair an individual's ability to work, reduce motivation, and limit opportunities for social and economic participation (Vick, 2020). Our review suggests that mental health is not simply a consequence of poverty but an integral aspect that shapes the poverty experience itself in developed countries, where mental health services and social integration are essential parts of overall well-being (Leu et al., 2016). Recognizing mental health as a subdimension of poverty provides a more nuanced understanding of MDP and highlights the need for policies that address mental health as part of comprehensive poverty alleviation strategies.

MDP could be closely related to one's subjective well-being and life satisfaction, yet research exploring this connection remains limited. Unlike income poverty, which affects well-being primarily through financial hardship, MDP encompasses various dimensions of deprivations—such as lack of access to education, healthcare, social support, and stable employment—that could affect overall well-being through diverse mechanisms. For instance, individuals deprived of social support may experience lower well-being because they lack the ability to participate meaningfully in society and suffer from social isolation (Siedlecki et al., 2014). Meanwhile, those facing catastrophic health expenditures may endure stress from mounting medical bills and face difficult tradeoffs between necessities and required medications (Zafar, 2016). While these different aspects of MDP collectively lower well-being and life satisfaction, the mechanisms behind this link may vary depending on the source of deprivation. Despite the importance of these nuanced effects, there is a paucity of research that directly examines how various subdimensions of MDP shape subjective well-being, particularly in developed countries. Future research should explore these nuanced relationships and re-examine the policies and interventions that could be particularly effective for specific well-being domains.

A few limitations of this study should be acknowledged. First, our search was restricted to the papers containing the keyword "multidimensional poverty," meaning studies that explored single dimensions of poverty without explicitly referencing MDP were not considered. This may have led to the omission of relevant research on specific aspects of poverty in non-poverty contexts, which could provide useful insights into well-being in particular areas. Second, the literature review was confined to articles indexed in Scopus and Web of Science databases, which, while comprehensive, may not

cover all relevant publications found in other databases or platforms. Third, the classification of developed countries often relies on economic indicators such as GDP per capita or industrialization levels, which may not fully capture other important dimensions of development, such as social well-being, income inequality, or access to healthcare. Finally, rapid economic and social changes in certain countries can blur the lines between "developed" and "developing" categories, making fixed classifications less relevant over time. This subjectivity in classification could impact the selection and categorization of studies included in the review, as alternative definitions might capture a broader or more nuanced range of perspectives on MDP.

References

Alkire, S., & Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of public economics*, *95*(7-8), 476-487.

Alkire, S., Roche, J. M., & Vaz, A. (2017). Changes over time in multidimensional poverty: Methodology and results for 34 countries. *World Development*, *94*, 232-249.

Boyer, L., Baumstarck, K., Iordanova, T., Fernandez, J., Jean, P., & Auquier, P. (2014). A poverty-related quality of life questionnaire can help to detect health inequalities in emergency departments. *Journal of clinical epidemiology*, *67*(3), 285-295.

Callander, E. J., and Schofield, D. J. (2015). Effect of asthma on falling into poverty: the overlooked costs of illness. *Annals of Allergy, Asthma & Immunology*, *114*(5), 374-378.

Callander, E. J., Schofield, D. J., and Shrestha, R. N. (2012). Capacity for freedom–using a new poverty measure to look at regional differences in living standards within Australia. *Geographical Research*, *50*(4), 411-420.

Callander, E. J., Schofield, D. J., and Shrestha, R. N. (2013). Chronic health conditions and poverty: a cross-sectional study using a multidimensional poverty measure. *BMJ open*, *3*(11), e003397.

Chanphati, J., and Thosuwanchot, N. (2023). “Strategic flexibility: A systematic review and future research agenda”, *Journal of Strategy and Management,* 16(3), 470-491.

Chen, Y., Mandler, T., & Meyer-Waarden, L. (2021). Three decades of research on loyalty programs: A literature review and future research agenda. *Journal of Business Research*, *124*, 179-197.

Chzhen, Y., De Neubourg, C., Plavgo, I., & de Milliano, M. (2016). Child poverty in the European Union: The multiple overlapping deprivation analysis approach (EU-MODA). *Child Indicators Research*, *9*, 335-356.

Crowther, M., Lim, W., and Crowther, M. A. (2010). “Systematic review and meta-analysis methodology”, *Blood, The Journal of the American Society of Hematology*, 116(17), 3140-3146.

Dhongde, S., & Haveman, R. (2022). Spatial and temporal trends in multidimensional poverty in the United States over the last decade. *Social Indicators Research*, *163*(1), 447-472.

García-Pérez, C., González-González, Y., & Prieto-Alaiz, M. (2017). Identifying the multidimensional poor in developed countries using relative thresholds: An application to Spanish data. *Social Indicators Research*, *131*, 291-303.

Herranz Aguayo, I., Díaz Herráiz, E., Montenegro Marques, E., Machado, I., & Almeida, S. (2016). Child at risk of poverty or social exclusion: Comparative view between Spain and Portugal in the European context. *Social Indicators Research*, *129*, 961-978.

Leu, C. H., Chen, K. M., & Chen, H. H. (2016). A multidimensional approach to child poverty in Taiwan. *Children and Youth Services Review*, *66*, 35-44.

Liberati, P., Resce, G., & Tosi, F. (2023). The probability of multidimensional poverty: A new approach and an empirical application to EU-SILC data. *Review of Income and Wealth*, *69*(3), 668-700.

Martinez, A., & Perales, F. (2017). The dynamics of multidimensional poverty in contemporary Australia. *Social Indicators Research*, *130*, 479-496.

Mishra, A., Ray, R., & Risse, L. (2018). A multidimensional dynamic measure of child disadvantage: A methodological tool for policymakers. *Social Indicators Research*, *139*, 1187-1218.

Mitra, S., Jones, K., Vick, B., Brown, D., McGinn, E., & Alexander, M. J. (2013). Implementing a multidimensional poverty measure using mixed methods and a participatory framework. *Social*

Indicators Research, *110*, 1061-1081.

Nam, S. J. (2020). Multidimensional poverty among female householders in Korea: Application of a latent class model. *Sustainability*, *12*(2), 701.

Park, E. Y., and Nam, S. J. (2020). Multidimensional poverty status of householders with disabilities in South Korea. *International Journal of Social Welfare*, *29*(1), 41-50.

Paul, J., Lim, W. M., O'Cass, A., Hao, A. W., and Bresciani, S. (2021). "Scientific procedures and rationales for systematic literature reviews (SPAR-4-SLR)", *International Journal of Consumer Studies*, 45(4), O1-O16.

Paul, J., and Rosado-Serrano, A. (2019). "Gradual internationalization vs born-global/international new venture models: A review and research agenda", *International Marketing Review,* 36(6), 830-858.

Sen, A. (1999). *Development as freedom*, Oxford University Press.

Shahab, M. H., Ghazali, E., and Mohtar, M. (2021). The role of elaboration likelihood model in consumer behaviour research and its extension to new technologies: A review and future research agenda. *International Journal of Consumer Studies*, *45*(4), 664-689.

Siedlecki, K. L., Salthouse, T. A., Oishi, S., & Jeswani, S. (2014). The relationship between social support and subjective well-being across age. *Social Indicators Research*, 117, 561-576

Townsend, P. (1979). *Poverty in the United Kingdom.* Harmondsworth: Penguin.

United Nations Development Programme. (2023). Multidimensional poverty index report 2023. UNDP. Retrieved from https://www.undp.org/sites/g/files/zskgke326/files/2023-07/2023mpireportenpdf.pdf

Vick, B. (2020). Measuring multi-dimensional deprivation among US Veterans. *Social Indicators Research*, *150*(1), 191-218.

Wagle, U. R. (2014). The counting-based measurement of multidimensional poverty: The focus on economic resources, inner capabilities, and relational resources in the United States. *Social Indicators Research*, *115*(1), 223-240.

Wüst, K., & Volkert, J. (2012). Childhood and capability deprivation in Germany: A quantitative analysis using German socio-economic panel data. *Social indicators research*, *106*, 439-469.

Zafar, S. Y. (2016). Financial toxicity of cancer care: It's time to intervene. *Journal of the National Cancer Institute*, 108(5), djv370.

