UCLA
UCLA Previously Published Works

Title

Notes From the Field: Creating a Typology of Childhood Obesity Intervention Strategies

Permalink

https://escholarship.org/uc/item/08z4486k

Journal

Evaluation & the Health Professions, 43(2)

ISSN

0163-2787

Authors

Robles, Brenda
Jiang, Linghui
Prelip, Michael
et al.

Publication Date

2020-06-01

DOI

10.1177/0163278719874424

Peer reviewed

Notes From the Field: Creating a Typology of Childhood Obesity Intervention Strategies

Brenda Robles[1,2], **Linghui Jiang**[1], **Michael Prelip**[1], **Tabashir Z. Nobari**[1,3], **Amy Wang**[1], **Tony Kuo**[2,4,5,6], **May C. Wang**[1]

[1]Department of Community Health Sciences, UCLA Fielding School of Public Health, Los Angeles, CA, USA

[2]Division of Chronic Disease and Injury Prevention, Los Angeles County Department of Public Health, Los Angeles, CA, USA

[3]PHFE WIC, Irwindale, CA, USA

[4]Department of Epidemiology, UCLA Fielding School of Public Health, Los Angeles, CA, USA

[5]Department of Family Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

[6]UCLA Clinical and Translational Science Institute, Los Angeles, CA, USA

Abstract

Classification systems can be useful for evaluating and communicating the impact of interventions. We describe how a typology was created to inform the development of a community intervention dose index (CIDI) intended to measure the strength of impacts attributed to multiple childhood obesity intervention strategies implemented in a large, diverse urban jurisdiction in the United States during 2000–2016. The categorization system was constructed via a three-stage process: (Stage 1) identify relevant constructs for categorizing intervention strategies; (Stage 2) review peer-reviewed literature and program requests for proposals to identify and integrate common attributes of intervention strategies based on Stage 1 constructs; and (Stage 3) vet the results from prior stages to develop a final version of the typology, slated for research application and for use in program improvement. The final system grouped strategies into four macrolevel and five microlevel categories. Macrolevel strategies included government/public institutional policies, infrastructure investments, and business practices. Microlevel strategies included group education, counseling, health communication and social marketing, home visitation, and screening and referral. Grouping intervention strategies in a purposeful, classified manner facilitated

communications among researchers and practitioners during the gathering and quantifying of intervention data for the CIDI project and may be used to guide scarce public health resource allocation decisions.

Keywords

obesity; nutrition; program planning and evaluation; typology; classification system

Background

Efficient (and accurate) communication across multiple disciplines is an emerging need that has been recognized by the National Institutes of Health (NIH) and other leaders in health-related research (Mabry, Olster, Morgan, & Abrams, 2008). This need is especially salient for advancing programs and scientific investigations that address health problems with multifactorial etiology or that require multisector collaboration among researchers, other scientists, and practitioners. A number of barriers to efficient communication across disciplines, research strategies, and research measures have been previously documented (Bruce, Lyall, Tait, & Williams, 2004). Among them includes the lack of a classification system that helps delineate the common attributes of intervention strategies developed to address complex health issues such as obesity.

Classification is the process of arranging objects, ideas, or events into groups or categories based on established criteria in a systematic way (Marradi, 1990). While some studies have described classification systems for health behavior change and behaviors (Michie et al., 2011; Salvador-Carulla et al., 2013) or chronic conditions (Goodman, Posner, Huang, Parekh, & Koh, 2013), it appears only one study to date has come close to classifying a broad range of childhood obesity intervention strategies in a systematic way (Ottley et al., 2018). However, Ottley et al.'s classification schema categorized over 121 different childhood obesity strategies solely as "targeted" and "nontargeted." Moreover, only "targeted" strategies were described by setting (e.g., schools, community), focus area (nutrition, physical activity), and intervention type (program, policy). The present article addresses existing gaps in public health practice by describing a multistaged process for developing a typology of early childhood obesity intervention strategies. A *typology* is a common system that utilizes conceptual characteristics for classification (Bailey, 1994; Marradi, 1990; Smith, 2002).

The present typology was used to construct a community intervention dose index (CIDI) that could be applied to estimate the local impacts of implementing multiple strategies in combination and/or in sequence. Specifically, its application allowed for better analysis, interpretation, and understanding of program data from the NIH-funded Early Childhood and Obesity Systems Science Study (ECOSYS), which sought to assess the dose of exposure of priority populations to several local childhood obesity intervention strategies implemented in Los Angeles County (LAC) during 2000–2016 (Wang et al., 2018). To the best of our knowledge, the present study is the first of its kind to *describe the development* of a typology of childhood obesity strategy interventions. The typology seeks to facilitate

communication among practitioners and researchers for the purpose of gathering and quantifying intervention data that are relevant to measuring the impact of childhood obesity prevention strategy interventions at the local level.

Method

An interdisciplinary team of obesity researchers and community intervention experts employed a three-stage process to create a typology for classifying early childhood obesity intervention strategies in LAC. All protocols and instruments for this process were reviewed and approved by the University of California, Los Angeles Institutional Review Board.

In Stage 1, key informant interviews were conducted in late 2015 with six researchers and practitioners knowledgeable about childhood obesity programs in LAC. Interviews were conducted in person or via phone, were guided by a semistructured interview script, and lasted approximately 60 minutes. Responses were recorded using a word processor on a laptop and read independently by three different members of the research team, each of whom recommended a thematic coding scheme. The three team members discussed and agreed upon a final coding scheme that was used to process the interviews.

In Stage 2, literature reviews were conducted by three research team members who were trained to search PubMed for human studies of obesity interventions published in the English language during the period January 1, 2000 to February 12, 2016. After relevant articles were identified (Figure 1), three research team members were trained to extract and code relevant information from these articles using the software NVivo Version 10 (QSR International Pte. Ltd.). They coded article content using tag terms based on findings from the qualitative analysis of key informant interviews (Stage 1). The three research team members employed a similar approach to analyze the requests for proposals (RFPs) from five major obesity intervention initiatives launched in LAC during 2000–2016.

In Stage 3, six members of the ECOSYS research team— which included researchers and practitioners with expertise in childhood obesity interventions—synthesized information from the published literature and RFP reviews (Stage 2) to create the final typology of childhood obesity intervention strategies. The final version of the typology underwent several iterative refinements. A rigorous vetting process was conducted to assure that group consensus was reached for the various conceptual characteristics of the typology.

Results

There were several key results and findings. In Stage 1, findings from the key informant interviews identified the following constructs relevant to classifying obesity intervention strategies: (a) setting (where it takes place, e.g., school vs. home); (b) the "approach"— whether the intervention strategy directly affects the priority population (such as education or screening) or has an indirect effect through environmental or policy change; (c) the obesity-related behavior (e.g., reducing soda consumption or fast-food intake, increasing fruit and vegetable intake, overall diet quality, breastfeeding, decreasing sedentary behavior, increasing physical activity); and (d) level(s) addressed based on the socioecological model. In Stage 2, the tag terms/phrases used to extract information from the 20 articles and five

RFPs included (1) study purpose—that is, what is the overall purpose of the study?; (2) reach— that is, how many people did the intervention(s) reach?; (3) objective—that is, what did the intervention(s) try to achieve?; (4) strategy— that is, how was the intervention(s) referred to?; (5) targeted behaviors— that is, what was the intervention trying to change?; (6) time— that is, what specific year(s) did the intervention(s) take place?; and (7) duration — that is, over how many years, months, or weeks, was the intervention conducted? In Stage 3, synthesis of the information extracted from Stage 2 yielded four macrolevel and five microlevel intervention strategy categories for early childhood obesity intervention (Figure 2): macrolevel: government policies, public institutional policies, infrastructure investments, and business practices and microlevel: group education, counseling, health communication and social marketing, home visitation, and body mass index screenings and referrals for weight management. Application of this typology has been described elsewhere (Wang et al., 2018).

Discussion

The present study is among the first to describe the process of developing a typology of childhood obesity intervention strategies that can be used to improve communication among researchers and practitioners from different disciplines and sectors of obesity research and practice. How the development of this typology aligns with previous approaches is difficult to compare, as it appears there is no generally accepted standard for their creation. For example, some researchers have used hierarchical cluster analysis methods (Mays, Scutchfield, Bhandari, & Smith, 2010), whereas other researchers have sought to provide a basic template for creating typologies that takes into account overarching concepts, row and column (dimension) variables, and matrixes created by cross-tabulated component categories of identified dimensions (Collier, LaPorte, & Seawright, 2012). Yet others have chosen to use a more simplified classification approach such as employing a lexicon to help guide disease modeling on responses to infectious disease transmission (Milwid et al., 2016) or to implement complex nutrition/obesity prevention policy, systems, and environmental change interventions in the community (Thompson, Sutton, & Kuo, 2019). While the original motivation for creating the typology was to inform the development of a CIDI of obesity intervention strategies implemented in LAC, as a research and policy tool, the broader application of this classification schema adds context and value to other decision-making processes of local organizations and clinical entities that must make difficult program investment choices under sparse resource conditions. This typology has the potential to improve communication and guide public and nonprofit sector investments in childhood obesity prevention.

Acknowledgments

References

Bailey KD (1994). Typologies and taxonomies: An introduction to classification techniques. Thousand Oaks, CA: Sage.

Bruce A, Lyall C, Tait J, & Williams R (2004). Interdisciplinary integration in Europe: The case of the Fifth Framework programme. Futures, 36, 457–470.

Collier D, LaPorte J, & Seawright J (2012). Putting typologies to work: Concept formation, measurement, and analytic rigor. Political Research Quarterly, 65, 217–232. doi:10.1177/1065912912437162

Goodman RA, Posner SF, Huang ES, Parekh AK, & Koh HK (2013). Defining and measuring chronic conditions: Imperatives for research, policy, program, and practice. Preventing Chronic Disease, 10, E66. doi:10.5888/pcd10.120239 [PubMed: 23618546]

Mabry PL, Olster DH, Morgan GD, & Abrams DB (2008). Interdisciplinary and systems science to improve population health: A view from the NIH Office of Behavioral and Social Sciences Research. American Journal of Preventive Medicine, 35, S211–S224. doi:10.1016/j.amepre.2008.05.018 [PubMed: 18619402]

Marradi A (1990). Classification, typology, taxonomy. Quality and Quantity, 24, 129–157.

Mays GP, Scutchfield FD, Bhandari MW, & Smith SA (2010). Understanding the organization of public health delivery systems: An empirical typology. Milbank Quarterly, 88, 81–111. doi:10.1111/j.1468-0009.2010.00590.x [PubMed: 20377759]

Michie S, Ashford S, Sniehotta FF, Dombrowski SU, Bishop A, & French CP (2011). A refined taxonomy of behaviour change techniques to help people change their physical activity and healthy eating behaviours: The CALO-RE taxonomy. Psychology & Health, 26, 1479–1498. doi:10.1080/08870446 2010. 540664 [PubMed: 21678185]

Milwid R, Steriu A, Arino J, Heffernan J, Hyder A, Schanzer D, … Moghadas SM (2016). Towards standardizing a lexicon of infectious disease modeling terms. Frontiers in Public Health, 28, 213 eCollection.

Ottley PG, Dawkins-Lyn N, Harris C, Dooyema C, Jernigan J, Kauh T, … Young-Hyman D (2018). Childhood Obesity Declines Project: An exploratory study of strategies identified in communities reporting declines. Childhood Obesity, 14, S12–S21. doi:10.1089/chi.2018.0020 [PubMed: 29565653]

Salvador-Carulla AF, Gomez R, Alonso F, Walsh CO, Almenara J, & Ruiz M, … eVITAL group. (2013). Basic concepts in the taxonomy of health-related behaviors, habits and lifestyle. International Journal of Environmental Research and Public Health, 10, 1963–1976. doi:10.3390/ijerph10051963 [PubMed: 23670578]

Smith KB (2002). Typologies, taxonomies, and the benefits of policy classification. Policy Studies Journal, 30, 379–395. doi:10.1111/j.1541-0072.2002.tb02153.x

Thompson J, Sutton K, & Kuo T (2019 6). The added value of establishing a lexicon to help inform, compare, and better understand the implementation of policy, systems, and environmental change strategies in Supplemental Nutrition Assistance Program Education. Preventive Medicine Reports, 14, 100873. doi:10.1016/j.pmedr.2019.100873. eCollection. [PubMed: 31080705]

Wang MC, Crespi CM, Jiang LH, Nobari T, Roper-Fingerhut H, Rauzon S, … Prelip M (2018). Developing an index of dose of exposure to early childhood obesity community interventions. Preventive Medicine, 111, 135–141. doi:10.1016/j.ypmed.2018.02.036 [PubMed: 29501476]
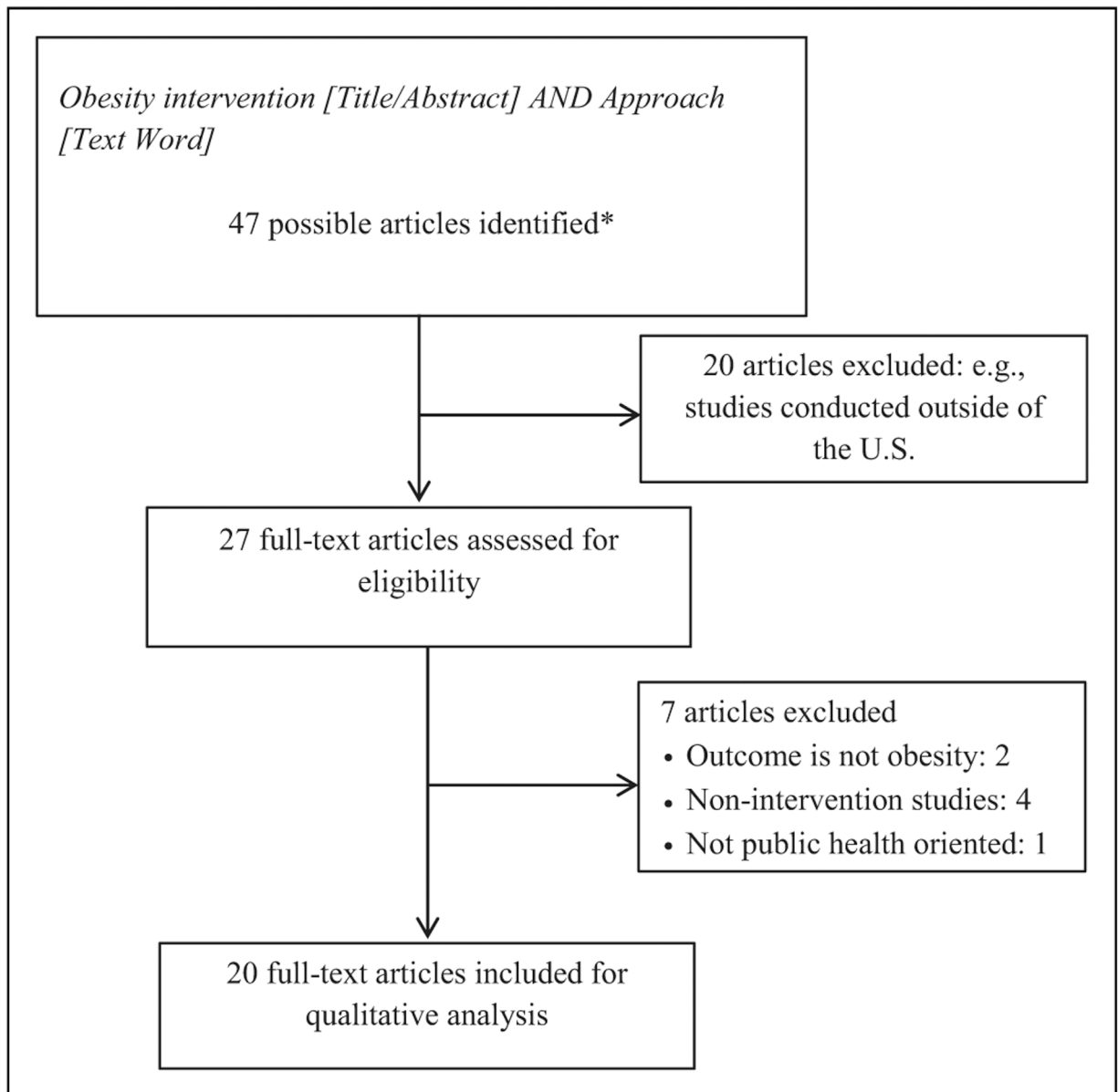
Figure 1.
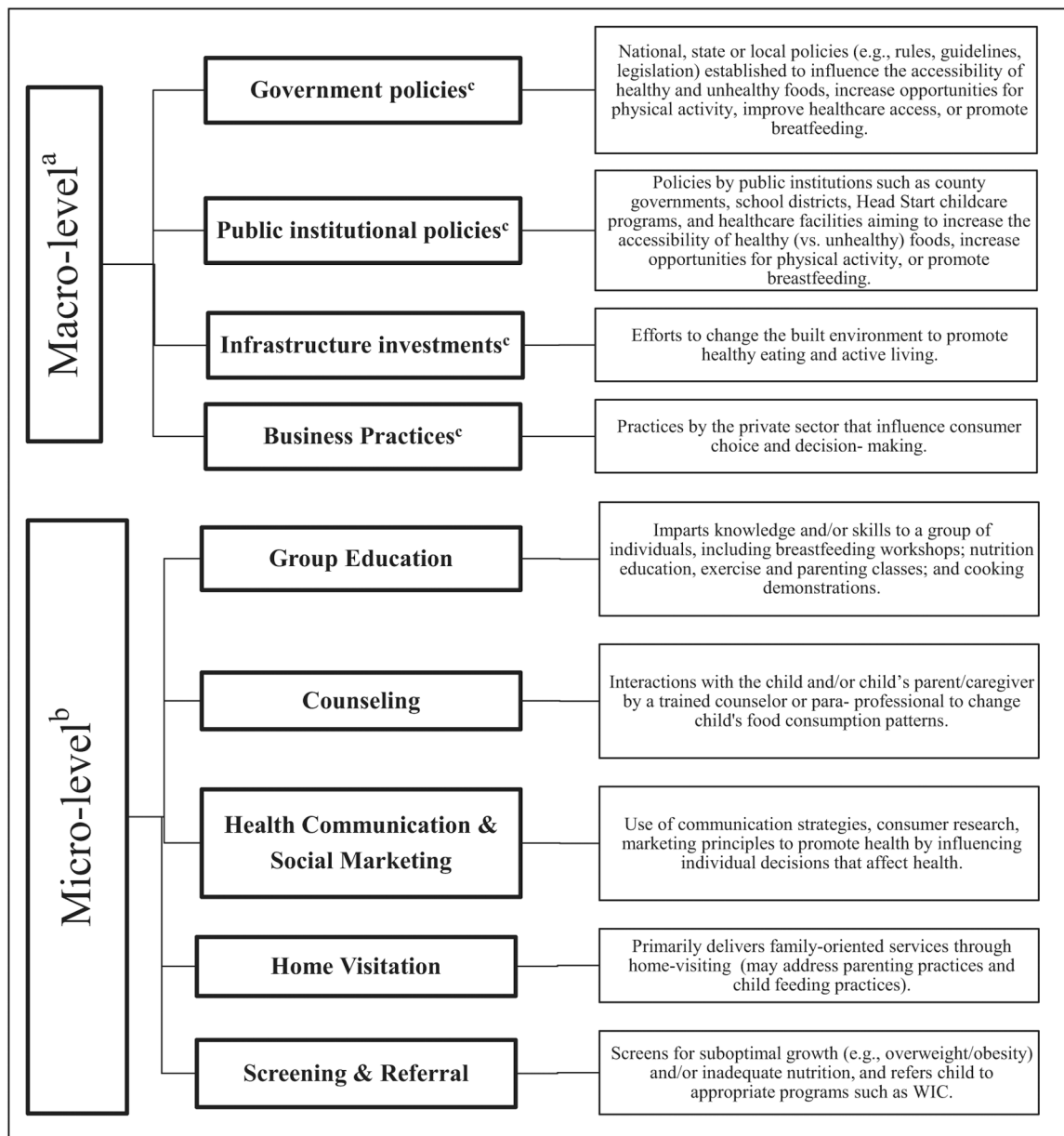Identification and selection of relevant articles from a PubMed search, 2010–2016.

Figure 2.

Typology of childhood obesity intervention strategies. This figure was previously presented by Wang et al. (2018). Copyright permission received by *Preventive Medicine* to reproduce this figure. [a]Strategies that affect the larger community and obesity-related behaviors and practices only indirectly. [b]Strategies that target a specific population and obesity-related behaviors and practices directly. [c]Examples: *Government policies*: food subsidies to support locally grown foods, food taxes on sugar-sweetened beverages, zoning laws to limit fast food operations, regulation of food marketing practices targeting children, tax breaks to businesses that provide on-site recreational facilities for exercise, health insurance for low-income children, longer maternity leave. *Public institutional policies*: nutritional guidelines for food procurement and foods served, mandatory physicaleducation for students, schools

allowing their facilities tobe used by residents during weekends (joint-use agreements), baby-friendly hospital policies. *Infrastructure investments*: walkable neighborhoods, parks, establishment of healthy food venues (e.g., farmers markets, supermarkets). *Business practices*: product placement in a grocery store, restaurant procurement of locally grown foods, menu changes, menu labeling.