

# STANDARDS FOR HEALTHY EATING, PHYSICAL ACTIVITY, SEDENTARY BEHAVIOUR AND SLEEP IN EARLY CHILDHOOD EDUCATION AND CARE SETTINGS: **A TOOLKIT**



## WEB ANNEX

Development of the standards  
and global survey questionnaire\*



\* The main standards toolkit is available at:

[https://apps.who.int/iris/bitstream/full URL TBC full URL TBC full URL TBC full URL TBC](https://apps.who.int/iris/bitstream/full%20URL%20TBC%20full%20URL%20TBC%20full%20URL%20TBC%20full%20URL%20TBC%20full%20URL%20TBC)

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World Health  
Organization

Standards for healthy eating, physical activity, sedentary behaviour and sleep in early childhood education and care settings: a toolkit. Web Annex. Development of the standards and global survey questionnaire

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Design: Eddy Hill Design



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## DEVELOPMENT OF THE STANDARDS

The global standards were developed through collaboration between WHO departments and offices and academic partners, and in consultation with a panel of technical experts and other relevant stakeholders. Development included a systematic review, analysis of existing national and subnational standards, an online global survey and technical expert review.

### Technical expert review

A group of technical experts met and assessed the ECEC standards' topics identified through the systematic review; the review of existing national and subnational standards; and the results of the survey of those working in ECEC settings. The suitability of each standard for ECEC settings across different continents was considered.

## Methodology and results

### Systematic review

Although some knowledge exists regarding the factors that could promote or hinder quality improvements in healthy eating and movement behaviours in ECEC settings, the evidence is spread across a wide array of published and unpublished literature.

The first step in the development of the standards was to analyse published systematic reviews to identify policies, interventions and The search terms used for each standard were:

practices that were associated with improved healthy eating and movement behaviours, specifically:

A systematic review was carried out on:

- the correlates of food habits and eating behaviours, physical activity, sedentary time (including screen time) and sleep in ECEC settings; and
- the barriers to, and facilitators of, promoting these behaviours in ECEC settings.

The systematic review was also designed to help identify policies, interventions and practices that were associated with improved healthy eating and movement behaviours. Papers were included if they: (i) were published during 2000–2018; (ii) were peer reviewed, written in English, and available in full text; (iii) included data from an ECEC (i.e. age 0–5 years) setting; and (iv) included a quantitative systematic review or meta-analysis. Obesity-focused articles were considered on a case-by-case basis. If they contained relevant correlates, barriers and/or facilitators relating to healthy eating and movement behaviours, they were included.

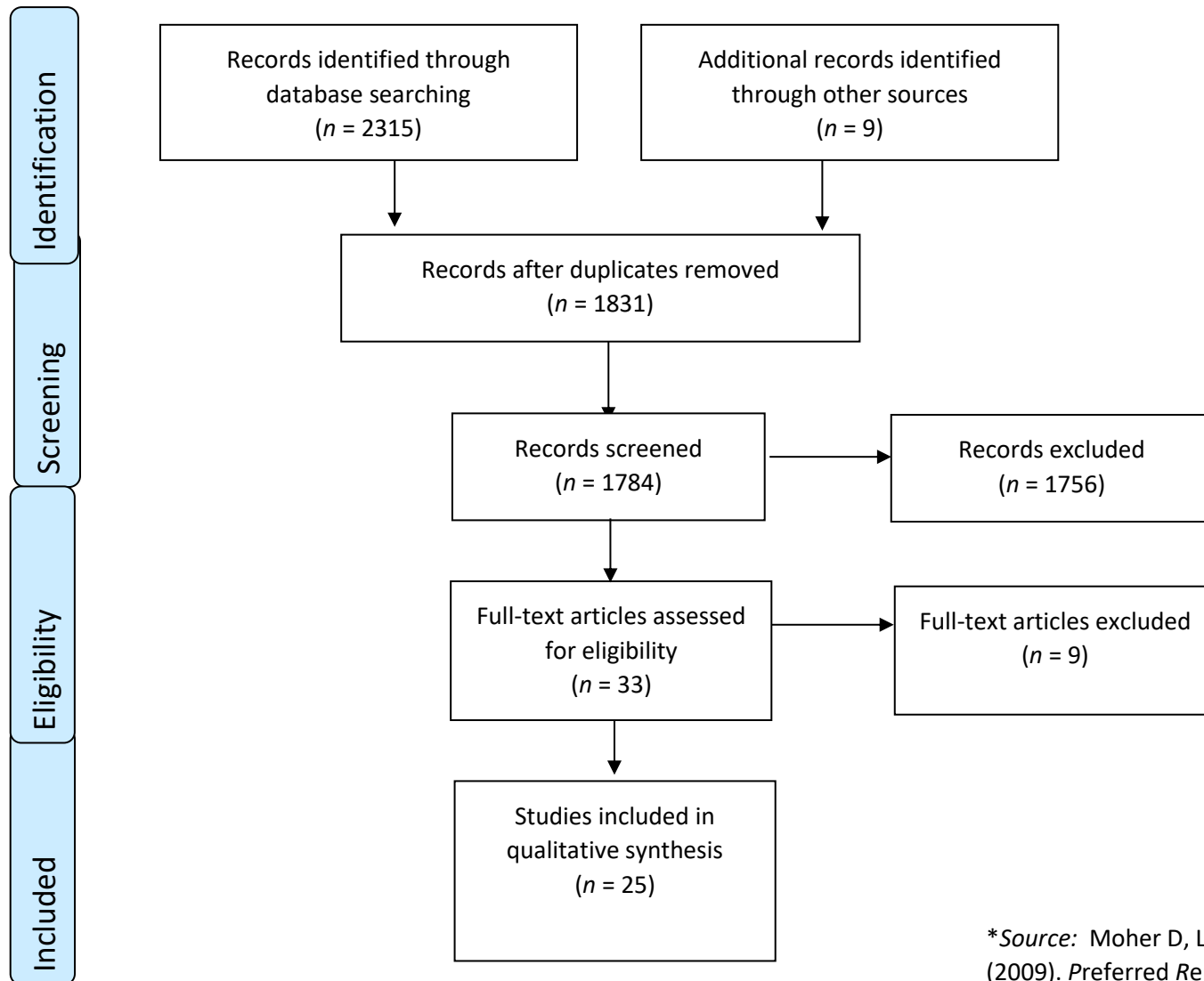
### Databases

The databases used for searches were: Scopus, PubMed, PsycINFO, Cochrane, ERIC (EBSCO), SPORT Discus.

<b>Standard 1</b>	“early child*” OR “toddler*” OR “infan*” OR “pediatr*” OR “paediatr*”
<b>Standard 2</b>	“physical activ*” OR “exercise*” OR “sedentary*” OR “sitting” OR “movement” OR “active play” OR “physical activity play” OR “screen time” OR “television” OR “tablet” OR “electronic media use” OR “sleep*” OR “nap” OR “naps” OR “napping” OR “diet” OR “healthy eating” OR “food habits” OR “eating behav*” OR “food” OR “drink” OR “beverage”.
<b>Standard 3</b>	“preschool*” OR “pre-school*” OR “childcare” OR “child-care” OR “daycare” OR “day care” OR “nursery” OR “pre-k” OR “kindergarten” OR “early education” OR “nursery*” OR “playschool” OR “playgroup”.
<b>Standard 4</b>	If there was an option in the database to restrict results to systematic reviews or meta-analyses, this was used. If not, the following keywords were included in the above search terms: “systematic review” OR “systematic literature review” OR “meta-analys*”.

The flow diagram structured according to the **Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)** is provided in Figure A.1. The protocol was registered in the International Prospective Register of Systematic Reviews (PROSPERO) – ID 111511.

Figure A.1. PRISMA flow diagram\*



\*Source: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic reviews and Meta-Analyses: the PRISMA statement. PLoS Med 6(7):e1000097.

Full-text articles were excluded if they:

- reviewed research instruments only;
- reviewed the influence of type of child care on obesity, without discussion of correlates, barriers, or facilitators;
- solely examined weight status as a dependent variable (as opposed to healthy eating, physical activity, sedentary time, or sleep); and/or
- examined the quantity of physical activity and sedentary time occurring during outdoor play sessions at child care without discussion of correlates, barriers, or facilitators.

Standard data extraction formats were used to collect information on methods, participants, interventions and outcomes. The Assessing the Methodological Quality of Systematic Reviews (AMSTAR) checklist was used to assess review quality. AMSTAR is a measurement tool commonly used to assess the methodological quality of systematic reviews<sup>1</sup> (1). Two independent reviewers assessed the quality of all included systematic reviews/meta-analyses using the AMSTAR checklist. Discrepancies were discussed until an agreement was reached on which reviews to include.

## Results

Searching of the databases returned a total of 2315 articles (see Figure A.1). The abstracts were screened against the inclusion and exclusion criteria, resulting in 33 full-text articles being reviewed. Upon further review, conducted by all authors and one independent researcher, 25 articles were included. Figure A.1 shows the number

of studies identified at each stage of the review process. Two unpublished systematic reviews were also found that met the selection criteria. Citations were managed using EndNote X8 (StataCorp, College Station, TX).

The following studies were included in the systematic review:

### Articles relating to healthy eating only

Campbell KJ, Hesketh KD (2007). Strategies which aim to positively impact on weight, physical activity, diet and sedentary behaviours in children from zero to five years. A systematic review of the literature. *Obes Rev.*8:327–338.

Matwiejczyk L, Mehta K, Scott J, Tonkin E, Coveney J (2018). Characteristics of effective interventions promoting healthy eating for pre-schoolers in childcare settings: an umbrella review. *Nutrients.*1;10(3):293.

Mikkelsen MV, Husby S, Skov LR, Perez-Cueto FJA (2014). A systematic review of types of health eating interventions in preschools. *Nutr J.*13:1–19.

Swyden K, Sisson SB, Lora K, Castle S, Copeland KA (2017). Association of childcare arrangement with overweight and obesity in preschool-aged children: a narrative review of literature. *Int J Obes.*41:1–12.

Zhang Z, Pereira JR, Sousa-Sa E, Okely AD, Feng X, Santos R (2018). Environmental characteristics of early childhood education

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<sup>1</sup> Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, et al. Development of amstar: A measurement tool to assess the methodological quality of systematic reviews. *BMC Med Res Methodol.* 2007;7:10.

and care centres and young children's weight status: a systematic review. *Prev Med*.106:13–25.

**Articles relating to physical activity and sedentary time (NB: no reviews focusing on sleep were identified)**

Downing KL, Hnatiuk JA, Hinkley T, Salmon J, Hesketh KD (2018). Interventions to reduce sedentary behaviour in 0–5 year olds: a systematic review and meta-analysis of randomised controlled trials. *Br J Sports Med*.52:314–321.

Finch M, Jones J, Yoong S, Wiggers J, Wolfenden L (2016). Effectiveness of centre-based childcare interventions in increasing child physical activity: a systematic review and meta-analysis for policymakers and staff. *Obes Rev*.17:412–428.

Gordon ES, Tucker P, Burke SM, Carron AV (2013). Effectiveness of physical activity interventions for preschoolers: a meta-analysis. *Res Q Exerc Sport*.84(3):287–294.

Ling J, Robbins LB, Wen F, Peng W (2015). Interventions to increase physical activity in children aged 2-5 years: a systematic review. *Pediatr Exerc Sci*.27(3):314–333.

Mehtala MAK, Sääkslahti AK, Inkinen ME, Poskiparta MEH (2014). A socio-ecological approach to physical activity interventions in childcare: a systematic review. *Int J Behav Nutr Phys Act*.11:22.

Okely T, Trost S, Flood V, Cliff D, Kelly B, Jones R et al. (2013)

Tonge KL, Jones RA, Okely AD (2016). Correlates of children's objectively measured physical activity and sedentary behaviour in early childhood education and care services: a systematic review. *Prev Med*, 89:129–139.

Vanderloo LM (2014). Screen-viewing among preschoolers in childcare: a systematic review. *BMC Pediatr*.14:205–221.

Ward DS, Vaughn A, McWilliams C, Hales D (2009). Physical activity at child care settings: review and research recommendations. *Am J Lifestyle Med*.3:474–488.

**Articles relating to both nutrition and physical activity/sedentary time/sleep**

Bell LK, Golley RK (2015). Interventions for improving young children's dietary through early childhood settings: a systematic review. *Int J Child Health Nutr*.4:14–32.

Bohanna I, Davis E, Corr L, Priest N, Tan H (2012). Family day care in Australia: a systematic review of research (1996–2010). *Aust J Early Child*.37(4):138–146.

Hesketh KD, Campbell KJ (2010). Interventions to prevent obesity in 0–5 year olds: an updated systematic review of the literature. *Child Obes*.18(Supp.1):S27–S35.

Larson N, Ward DS, Neelon SB, Story M (2011). What role can child-care settings play in obesity prevention? A review of the

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