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Original article

# Current clinical trials in paediatrics: Report of the ESPEN special interest group in paediatrics

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SUMMARY

*Background & aims:* At the 38th annual ESPEN congress in The Hague, the Netherlands, the Special Interest Group (SIG) in Paediatrics presented data about current research activities in the field of paediatric nutrition which are performed worldwide and translated this to future research perspectives.
*Methods:* Extensive search of all registered observational and interventional clinical trials in the database ClinicalTrials.gov using the search terms: children nutrition, paediatrics nutrition and children feeding.
*Results:* A total of 717 studies were found; 173 were duplicates and 114 included adult participants and were therefore excluded. Hence, 430 remained for analysis, of which 69% were randomized controlled trials. The most investigated research topic was nutrition in specific diseases (n = 98), followed by obesity (n = 92), and studies including premature infants (n = 48). The overall median estimated enrolment of children in the trials was 150 children [IQR 50–365]. There were 44 studies in which >1000 participants will be enrolled and six studies with >10,000 participants. Studies including >1000 participants were primarily performed in North America (39%), Africa (27%), and Europe (16%).
*Conclusions:* This SIG report showed that 430 clinical nutrition trials in paediatrics are registered and current research focusses primarily on specific diseases and obesity. The SIG paediatrics encourages future research to invest in well-controlled interventional trials.


## 1. Introduction

In September 2017 at the 38th European Society for Clinical Nutrition and Metabolism (ESPEN) congress in The Hague, the Netherlands the ESPEN special interest group (SIG) in Paediatrics had its annual meeting. One of the objectives of SIG Paediatrics is to coordinate, promote, or develop research projects or programs of studies in clinical nutrition in hospitalized and outpatient children and to develop position statements [1]. The aim of the current manuscript is to report about ongoing paediatric research activities worldwide, which are registered in ClinicalTrials.gov and discuss future research activities that might be useful.

## 2. Methods

To gain an overview of all the current trials performed in the field of clinical nutrition in paediatrics the website ClinicalTrials.gov was used. The website provides the ability to find individual trials, but also search for them using certain terms. The following three search terms were entered in the search field: "Children AND

*Abbreviations:* ESPEN, European Society for Clinical Nutrition and Metabolism; ESPGHAN, European Society for Paediatric Gastroenterology Hepatology and Nutrition; ESPNIC, European Society of Paediatric Neonatal Intensive Care; ESPR, European Society of Paediatric Research; PN, parenteral nutrition; RCT, randomized controlled trials; SIG, Special interest group.

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Nutrition", "Paediatrics AND Nutrition", and "Children AND Feeding". Trials were included in this search if: 1) Participants were children in the age range 0–18 year; 2) Design of the trial was intervention and/or observational 3) Status of trial was recruitment or pre-recruitment. No limits were selected with regard to gender, study results, study phase and funder type. Data acquisition was completed on 8th of August 2017 prior to the ESPEN annual meeting.

Data collected for subsequent analysis were the start and (expected) completion date of primary outcome, title, study type, study design, estimated enrolment number, gender, minimum and maximum age, sponsor, country were research is performed and number of centers included. The investigators of the registered trials need to select the condition, usually the main topic or disease, in which their research is performed. For example, an investigator was interested in undernutrition within Crohn's disease. When registering the trial the investigator need to select a condition (topic or disease field), which can either be undernutrition or Crohn's disease in this example. Therefore, conditions from ClinicalTrials.gov were based on what the investigators of the trials found the most important and suitable condition for their research. We collected the conditions of the investigators and used them to classify the main topic of the trials in our database, which was performed by one observer (RE). The trial characteristics were summarized and reported as counts and percentages.

## 3. Results

With applying the three search terms, 717 studies were found, out of which 173 were duplicates and 114 included adult populations and were therefore excluded (Fig. 1). Hence, 430 studies were brought forward for further analysis. Sixty-nine percent of the studies were randomized controlled trials (RCT), 18% non-randomized intervention trials and 13% observational studies. Most of the studies were performed in North America (49%), Europe (24%) and Asia (17%) (Table 1); 53% of the studies were single center research. The studied population consisted only of infants in 25% and only adolescents in 2% of the studies. The expected date of study completion was for 213 studies in 2017 and 10 in 2018.

Fifteen different research topics were identified within paediatric nutrition research. The most investigated research topic was nutrition in specific diseases (n = 98), followed by obesity (n = 92), and studies including premature infants (n = 48) (Fig. 2). Obesity and undernutrition combined accounted for 27% (n = 116) of all research. Studies related to obesity were predominantly performed in North-America (67%) and Europe (23%), whereas studies regarding undernutrition in the general population were performed in Africa (50%) and Asia (28%). Hospital undernutrition was mostly investigated in Asia (68%) and undernutrition resulting from anorexia nervosa in Europe (100%). Trials investigating obesity were mostly based on educational, nutritional of exercise intervention (n = 80). (Epi)genetics, altered pharmacokinetics and development were also investigated.

A total of 98 studies investigated nutrition within specific diseases, of which 30 were performed in gastrointestinal diseases, such as Crohn's disease (n = 10), inflammatory bowel disease (n = 5), and short bowel syndrome (n = 2). Other investigated areas were children with respiratory diseases (n = 11) and neurological conditions (n = 10) (Fig. 3). The median estimated number of participant enrolment was 150 children [IQR 50–365]. There were 44 studies in which ≥1000 participants will be enrolled and six studies with >10,000 participants. Studies including ≥1000 participants were primarily performed in North America (39%), Africa (27%), and Europe (16%). The three largest nutrition RCT were: 1) a double-blind RCT on antibiotics for children with severe diarrhoea in Kenya; 2) a RCT investigating the impact of promoting community initiated kangaroo mother care for low birth weight Infants in India; 3) a single arm RCT investigating a nutritional care program and psychosocial stimulation to improve malnourished children's development in Bangladesh.

## 4. Discussion

This analysis of the currently ongoing clinical trials worldwide showed that most reported studies were randomized clinical trials,

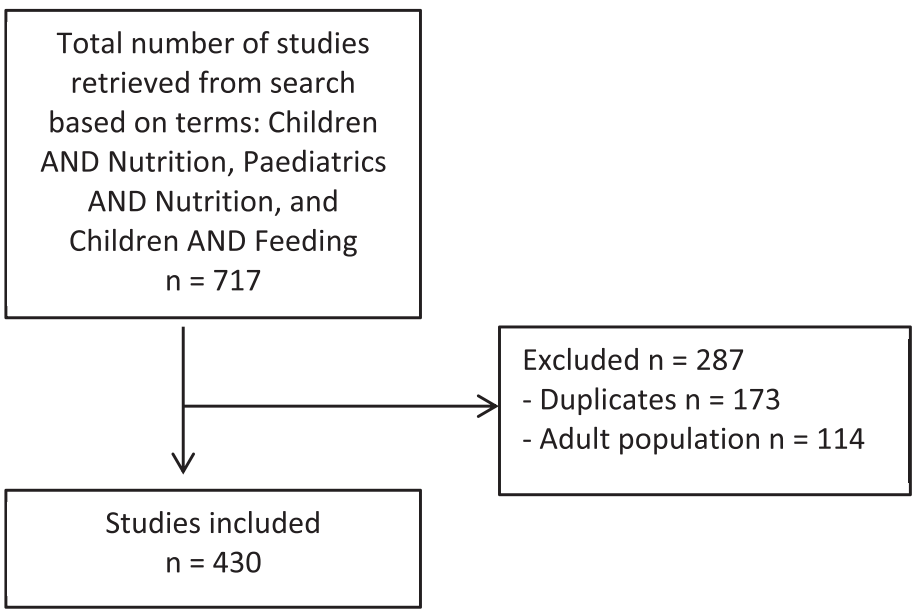


**Fig. 1.** Flowchart of search for clinical nutrition studies in children using database of ClinicalTrials.gov.

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