

## Review

# A Review of Trends in Scandinavian Early Childhood Education and Care Research from 2006 to 2021

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**Abstract:** This study provides a comprehensive overview of trends in Scandinavian early childhood education (ECEC) research from 2006 to 2021, based on the Nordic Base of Early Childhood Education and Care's (NB-ECEC) annual reports. The study reveals a notable increase in empirical studies in Scandinavia, particularly in Sweden and Norway. The rise in English publications is attributed to international collaborations and political guidelines. Dominant thematic areas include *pedagogical practices* and *teaching and learning*, while *economics* and *classroom management* receive less focus. *Qualitative research* prevails, with a shortage of *quantitative methods* like randomised controlled trials and longitudinal designs. The study emphasises the importance of diversifying research methodologies, acknowledges positive developments in research quality, and notes an increasing trend in international peer-reviewed journal publications.

**Keywords:** review study; early childhood education and care; Scandinavia; ECEC research



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## 1. Introduction

This study aims to examine trends in early childhood education and care (ECEC) research in the Scandinavian countries (Denmark, Sweden, and Norway). These countries have well-established ECEC systems that ensure the legal right of all preschool children (0–6 years) to attend full-time ECEC provisions [1].

However, in this introduction we include publication from all Nordic countries, i.e., in addition to the Scandinavian countries also Finland and Iceland, because it is common in the international literature to refer to Nordic rather than Scandinavian countries. ECEC systems are frequently portrayed as well-developed and of relatively high quality [2–7]. Based on the literature, one can summarise the apparent and most prominent similarities between Nordic ECEC systems as follows: high-quality standards; a low child-to-staff ratio; highly qualified staff with acceptable wages; a mainly universal age range (1–6/7); a clear emphasis on the well-being and happiness of children in the present; and an emphasis on play and outdoor play. These are combined with scepticism about the concept of school preparation, supportive and well-equipped environments for play and development, and the inclusion of all children and families, enabling parents to work full-time and focus on parental involvement.

One of the hallmarks of Nordic ECEC is its holistic approach, often referred to as EDUCARE (see, e.g., [8,9]). This means that particular emphasis is placed on the overall development of children in terms of physical, social, emotional, and cognitive development. This approach is closely related to a specific value perspective [10,11] reflecting child-centeredness and democratic values [7]. However, it should be realised that there are also differences between the Nordic countries' ECEC systems, so it would be too vague to treat

the entire Nordic region as a unified system (for more insight into the differences, see, e.g., [6]).

This notwithstanding, the early childhood education and care (ECEC) systems of all Nordic countries largely achieve the required quality standards demanded in European policy documents (see [12–14]). This is mainly made possible through adequate public funding. According to the OECD’s Social Expenditure Database [15], the Nordic countries, together with France, are the only OECD countries where the funding of the childcare sector exceeds one per cent of the gross domestic product (GDP). This indicates a political will to prioritise and invest in the youngest, which generally reflects welfare and family policies in Nordic countries. One may consider this a crucial prerequisite for ensuring that all children and families have access to ECEC of sufficient quality. A recent comparative analysis revealed that only six EU Member States, including Denmark, Finland, and Sweden, alongside Germany, Estonia, Slovenia, and Norway (not an EU member), do not have an ECEC gap [16]. This means that these countries “...at the end of a well-paid childcare leave coincides or even overlaps with the start of a place guarantee in ECEC” (ibid, p. 23). Furthermore, only a few countries warrant universal access to ECEC for all children from a very young age; again, together with Estonia, Germany, and Slovenia, all Scandinavian countries and Finland provide this statutory right (ibid, p. 5).

Recent systematic reviews focusing on Scandinavian ECEC have explored a variety of topics, such as the overall significance of ECEC [17–19], staff development and competence [20,21], parent partnerships in families with immigrant backgrounds [22,23], special education within the ECEC context [24], pedagogical staff competence in both ECEC and schools [25], early learning in ECEC settings [26–28], the impact of group size and caregivers on children’s outcomes in Scandinavian ECEC [29], and the overall quality of ECEC provision [30,31]. Thus, several thematic reviews on Scandinavian ECEC research have been conducted, but there is a notable absence of a comprehensive overview mapping long-term trends in both thematic and methodological approaches. Furthermore, there is a gap in studies that map trends in the number of research studies, examine characteristics such as country-specific patterns and publication language or address developments in publication quality. Given the sustained political attention to the importance of early childhood education and care (ECEC) in the Nordic countries, it becomes relevant to investigate how ECEC research is funded.

This study aims to fill this gap by providing a comprehensive overview that identifies trends and research gaps through an examination of Scandinavian ECEC research based on the annual systematic scoping reports published in the Nordic Base of Early Childhood Education and Care [32] between 2006 and 2021. An overview of Scandinavian ECEC research published in English can also offer the international research community insights into extensively studied topics and areas that warrant further investigation.

**Aim and research questions.**

The aim of this study is to identify trends in Scandinavian ECEC research during the period 2006 to 2021, guided by the following five research questions:

- What are the trends in publication volume and languages?
- What are the trends in the topics covered by the studies?
- What are the trends in methodological approaches?
- What are the trends regarding the quality of the publications?
- What are the trends concerning research funding?

## 2. Materials and Methods

This study of trends in Scandinavian ECEC research is based on annual reports published in The Nordic Base of Early Childhood Education and Care (NB-ECEC), including quality-assured ECEC research from Denmark, Sweden, and Norway. The database encompasses annual reports conducted by three research institutions (see Supplementary Materials A) between 2006 and 2021.

The annual reports from NB-ECEC serve as a valuable resource for researchers, policy-makers, professionals, and students by providing access to previous research characteristics (see Supplementary Materials B). These reports provide insights into the methodologies, themes, quality, and funding sources that characterise ECEC research between 2006 and 2021. In this way, all data on which the current trend analysis is based are openly accessible in NB-ECEC, allowing for an assessment of the credibility of the analysis. The thorough examination of data collected over an extended period holds the potential to present a clearer picture of the research landscape, highlighting undertaken efforts and identifying existing research gaps. The transparency in the methodology, from 2006 to 2021, including search strings (see Supplementary Materials C), searches in journals and databases (see Supplementary Materials E), inclusion/exclusion criteria (see Supplementary Materials D), data extraction, and quality assessments, enables the summarisation of trends in research. With minor changes in the review processes between 2006 and 2021, the data can be compared to address the study's research questions. Any methodological alterations will be explicitly reported in the figures presented in the results section, ensuring transparency in the study.

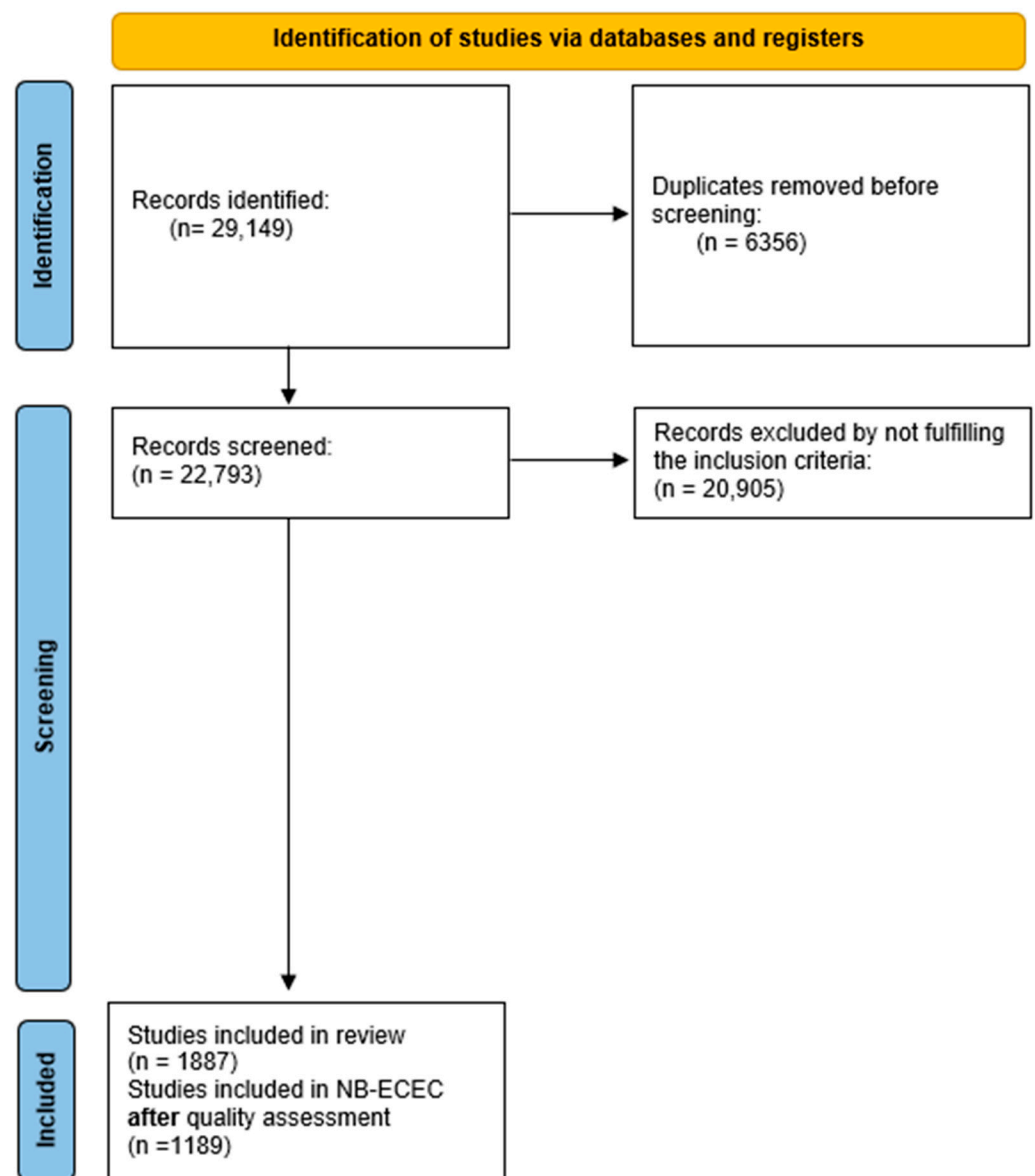
### *2.1. Study Identifications*

A search in the NB-ECEC database's annual reports and a summation of all identified studies spanning the period 2006 to 2021 yielded an initial identification of 29,149 studies, whereof 6356 were identified as duplicates. Subsequently, a total of 20,905 studies were excluded according to predefined inclusion and exclusion criteria (refer to Supplementary Materials D). This resulted in the identification of 1887 studies eligible for data extraction, as depicted in Figure 1. The empirical material in this study is derived from the data extracted from these 1887 studies. The flow chart provides a summary of the numbers extracted from all NB-ECEC reports.

### *2.2. Data Analysis*

Since 2006, the screening and extraction of data from empirical studies of Scandinavian ECEC research have been carried out using the EPPI reviewer web [33]. In EPPI, there are some questions to which it is possible to give multiple answers. These are labelled as multiple coding.

As outlined in the NB-ECEC's annual reports, all included studies from 2006 to 2021 have been systematically analysed using a similar coding scheme (in EPPI Reviewer). This consistent approach allows for a meaningful compilation and comparison of findings throughout this period. All studies included in the annual reports have also undergone a quality assessment conducted by Scandinavian experts in Scandinavian ECEC research. Consequently, studies evaluated as medium and high quality are featured in the database, accompanied by a reference and a concise summary. The findings are directed toward students, early childhood education educators, educational consultants, researchers, policy-makers, daycare owners, and individuals interested in early childhood education research. The quality assessment was conducted double-blind based on an evaluation of to what degree the published studies adhered to scientific standards related to validity, reliability, and transparency in data collection methods, data analysis, research questions, ethical considerations, and the fit between the study's purpose and the methodological approach. The studies were assessed as high-, medium-, or low-quality assessments. In cases of disagreement in the evaluations, agreement was sought through a dialogue with the reviewers. When consensus could not be reached, a third expert made the final decision. After reviewing the annual NB-ECEC reports, the reported number of studies, study characteristics, themes, methods, quality assessments and funding were recorded in Excel. For this study, the number of identified studies, duplicates, excluded studies, and included studies for each year were entered into Excel for analysis.



**Figure 1.** Summary of the identification and screening of records and the inclusion of studies for the 15 annual review reports (2006–2021) of Scandinavian ECEC research. Note: The inclusion and exclusion criteria are presented in Supplementary Materials D.

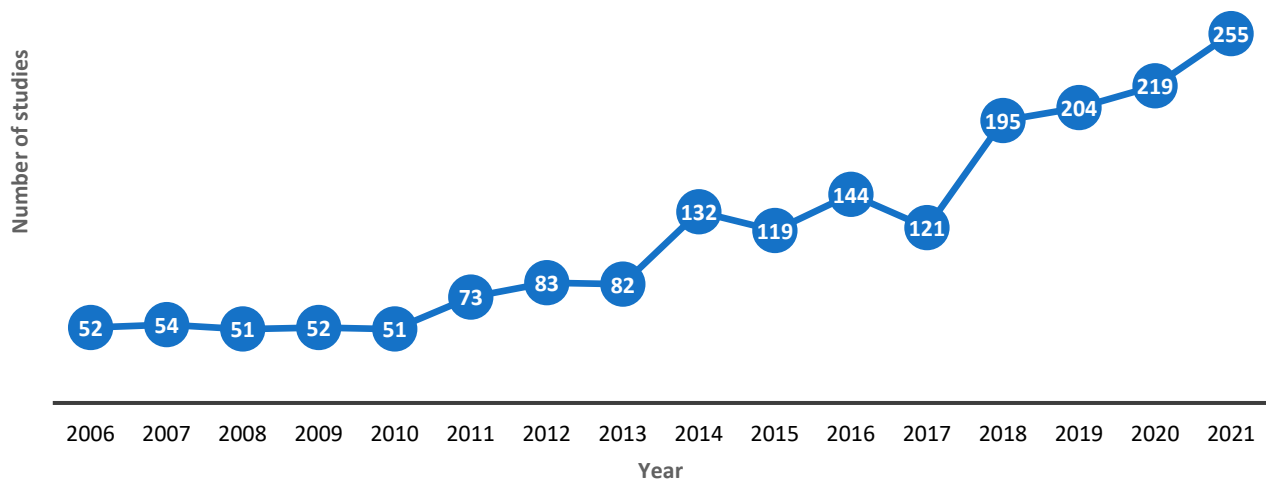
### 3. Results

The presentation of the results follows the order of the research questions.

#### 1. *What are the trends in publication volume and languages?*

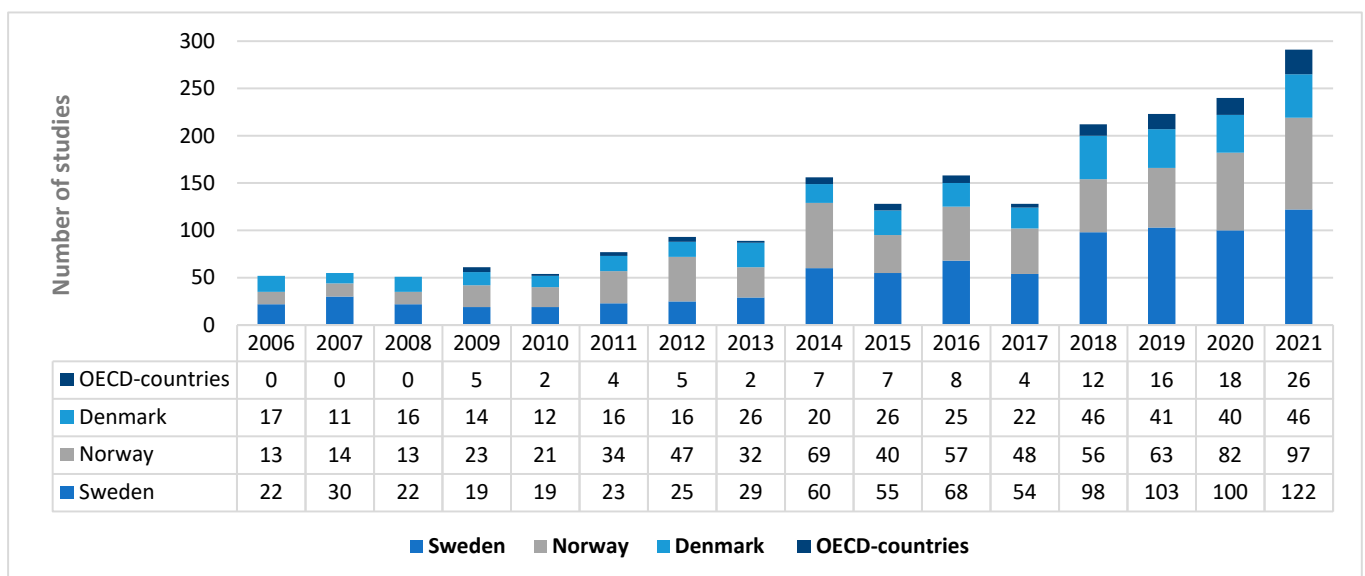
This section outlines the total volume of studies published from 2006 to 2021 categorised in the NB-ECEC's annual reports. Figure 2 shows the total volume of studies from 2006 to 2021.

The number of included studies remained relatively stable at around 50 studies per year until 2010. However, from 2010 to 2021, we can observe an increase in the total number of publications almost every year, with some minor fluctuations. Notably, in 2015 and 2017, we can observe a decrease in the number of studies. However, we can see an increase in publications, from 121 studies in 2018 to 255 in 2021.



**Figure 2.** Total number of included studies from 2006 to 2021. Note: Single coding.

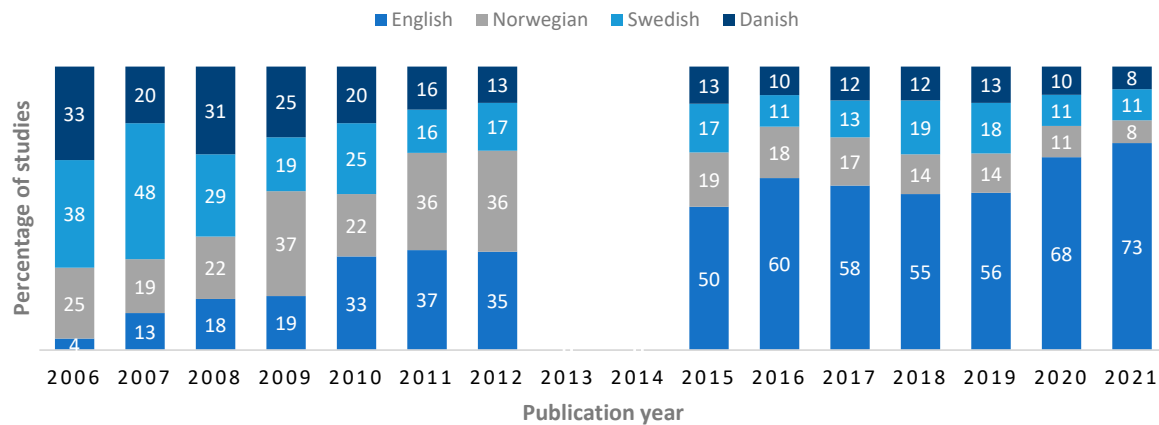
This section presents the country-specific number of publications and publication language categorised in the NB-ECEC's annual reports. Figure 3 shows the annual distribution of publications across the three Scandinavian countries and the OECD.



**Figure 3.** Distribution of the number of studies across the Scandinavian and OECD countries. Note: Studies including OECD countries were first reported in 2009. Multiple coding.

Denmark is shown to have the fewest contributions among the Scandinavian countries from 2009 to 2021, with a relatively smaller proportional growth compared to Sweden and Norway. Sweden exhibited a considerable increase in the number of included studies, becoming the country with the most contributions from 2015 to 2021. From 2009 to 2014, Norway had the largest number of publications, and from 2015, we observed a decrease in the number of publications compared to Sweden. As shown in Figure 4, the number of studies in OECD countries increased from 2018 to 2021.

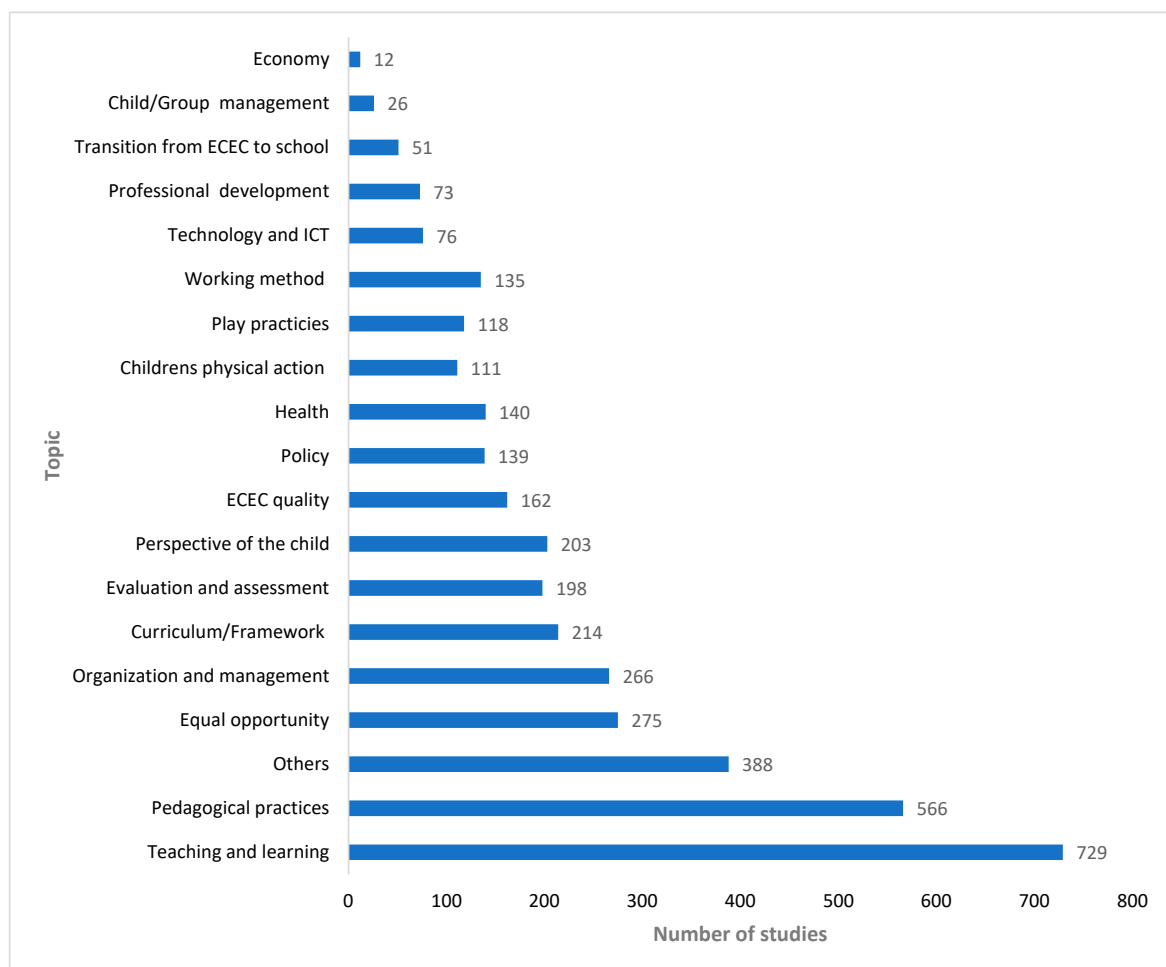
Between 2006 and 2021, there was a significant increase in the proportion of publications in English. The percentage of English publications in 2021 was 73% (2021: Danish 8%, Swedish 11%, and Norwegian 8%). In total, we observe an increase in English language publications from 4% in 2006 to 73% in 2021. The proportion of publications in Norwegian was reduced between 2012 and 2021, while publications in Swedish were reduced between 2018 and 2021. We observe the same trends in the Danish language between 2017 and 2021.



**Figure 4.** Percentage of studies with the four included publication language. Note: No data were available for 2013 and 2014 due to a lack of reporting. Single coding.

## 2. What are the trends in the topics covered by the studies?

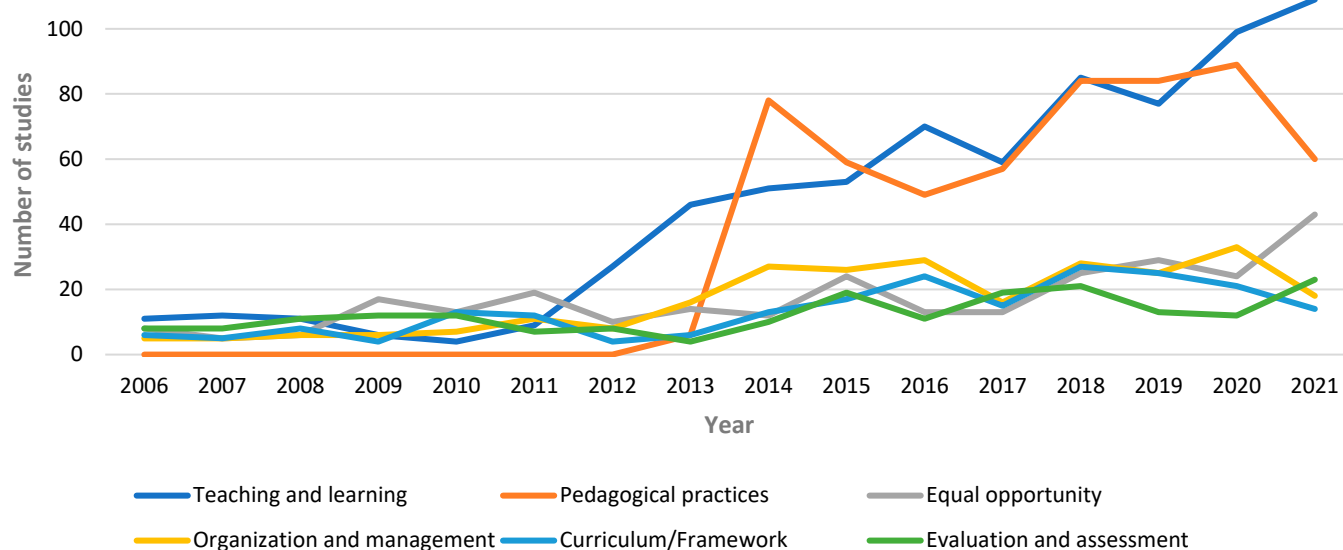
This section presents the various topics that have been reported in the annual reports in NB-ECEC. The number of studies that have addressed these topics is shown in Figure 5.



**Figure 5.** Frequency of research topics from 2006 to 2021 (summarised). Note: Pedagogical practices reported only from 2013. Some new categories were added in 2021, and others had minor name revisions. New categories are not included in this study. For more details, see the latest NB-ECEC report [32]. Multiple coding.

Since the codes were established in 2006 and were exposed to changes over the years, we have used the codes reported in the annual reports published on the ECEC database [32]. These codes are not defined in the published reports. The two most prominent topics studied during the period 2006–2021 are *teaching and learning* ( $n = 729$ ) and *pedagogical practices* ( $n = 566$ ). *Equal opportunities* ( $n = 275$ ), *organisation and management* ( $n = 266$ ), and *curriculum/framework* ( $n = 214$ ) represent the third and fourth most reported topics. *Economy* ( $n = 12$ ), *child/group management* ( $n = 26$ ), and *transition from ECEC to school* (51) are the three least reported topics.

Figure 6 illustrates the number of studies dealing with the six most prominent research topics from 2006 to 2021.



**Figure 6.** Frequency of the six most prominent research topics. Note: Pedagogical practices reported only from 2013. Equal opportunity changed to equal opportunity or inclusion/exclusion in 2021. Evaluation and assessment changed to assessment, evaluation, documentation, and development in 2021. Multiple coding.

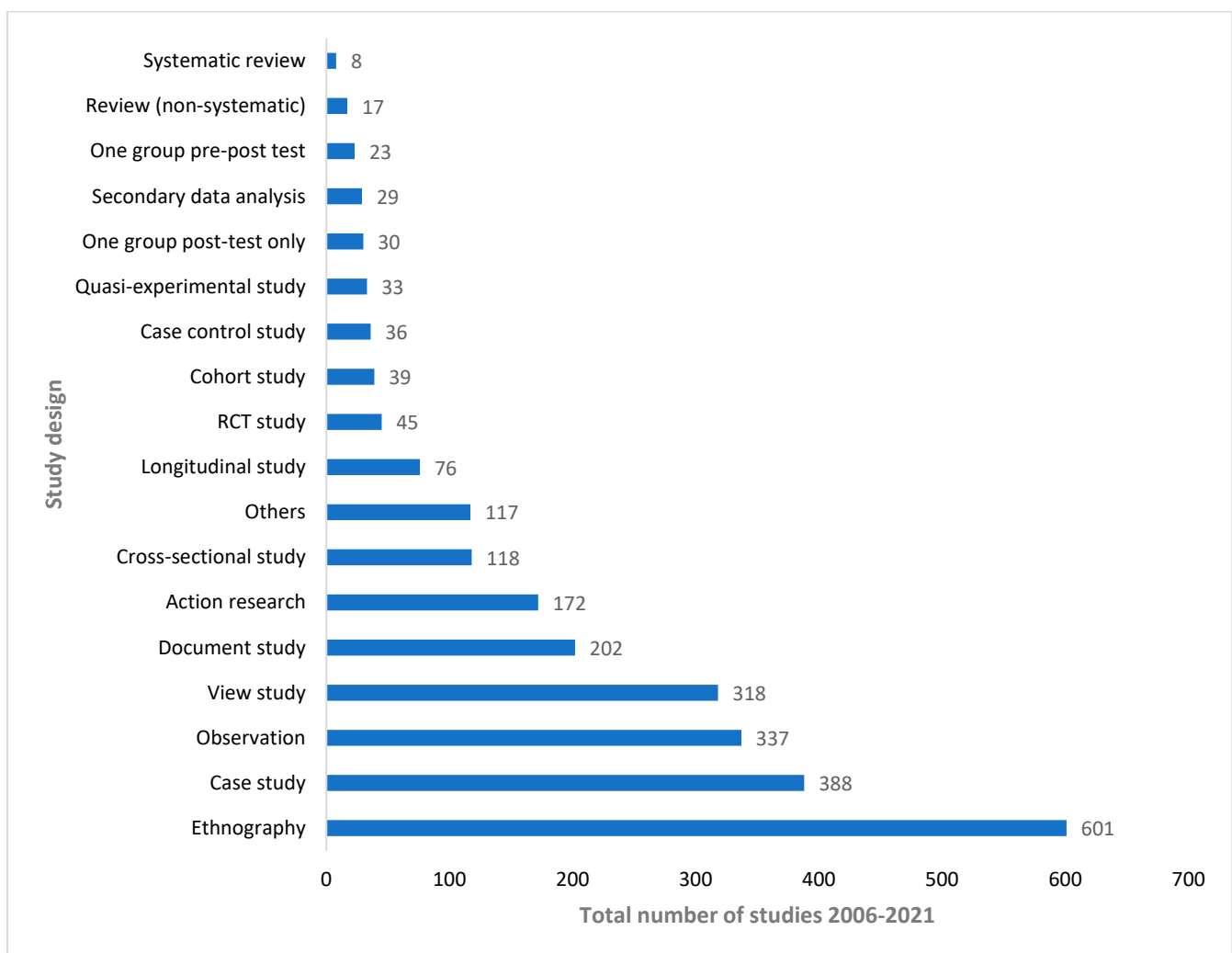
The topics of pedagogical practices and teaching and learning show a notable growth in the number of publications over the last 8–10 years. However, if we consider the year-to-year growth in the overall number of studies, the proportion of studies in these categories has remained rather stable, fluctuating at around 30–50% of the included studies [32]. Remarkably, we observe that teaching and learning continue to increase from 2020 to 2021, while pedagogical practices decrease in this period.

### 3. What are the trends in methodological approaches?

This section outlines the methodological approaches of the Scandinavian ECEC as reported in the NB-ECEC's annual reports.

Figure 7 shows that the majority of ECEC research between 2006 and 2021 used *ethnography* (601), *case study* (388), *observation* (337), and *view study* (318) as study designs. On the other hand, *one group pre-post test* (23), *review* (17), and *systematic review* (8) designs were less commonly employed in the studies. Only 45 studies used *RCT*, while 117 studies were categorised as *Other*, not reporting on any of the design categories applied in NB-ECEC.



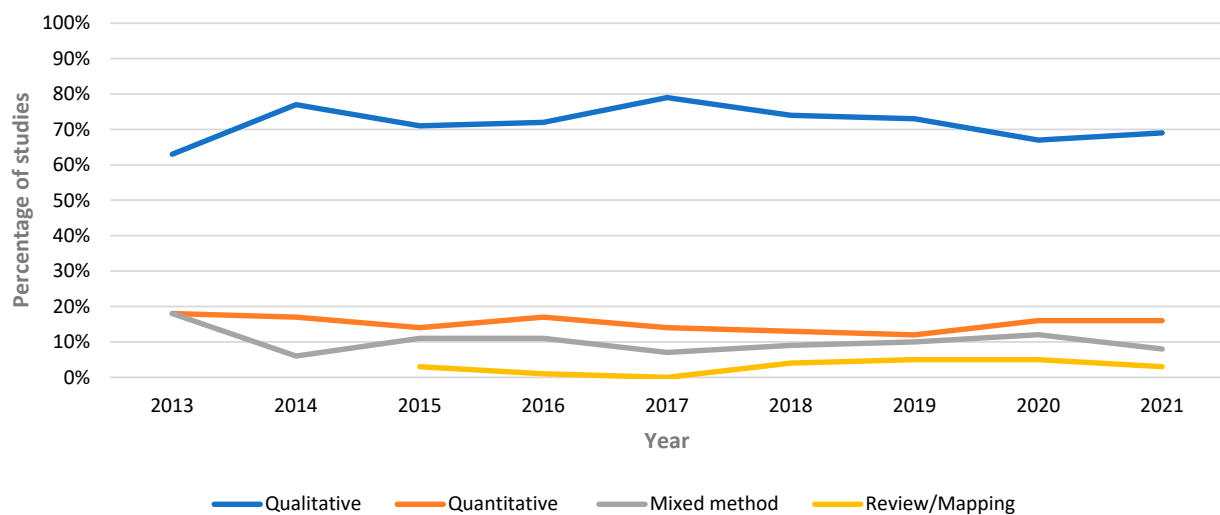


**Figure 7.** Frequency of study designs from 2006 to 2021 (summarised). Note: Observations reported from 2015 to 2021. Reviews (non-systematic) reported from 2018 to 2021. *Other* reported from 2015 to 2021. Multiple coding.

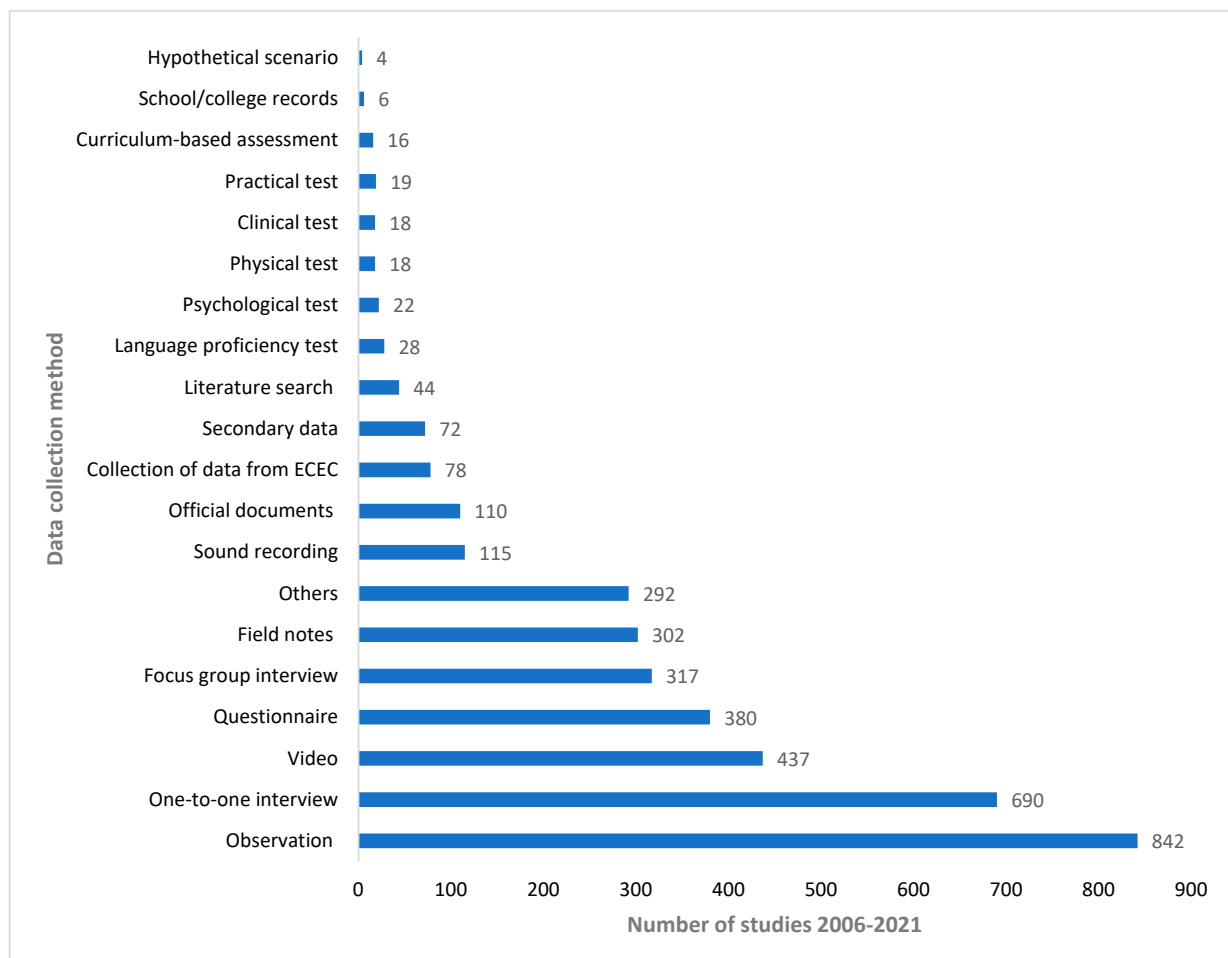
As Figure 8 illustrates, *qualitative* research was the most common type of research method used within ECEC research from 2013 to 2021. *Qualitative data* are the empirical basis of 60–80% of the studies during the entire period, while *quantitative data* are used in 15–20% of the studies; about 10% of the studies used *mixed methods*. *Review/mapping*, i.e., research articles as data material, are only reported from 2015 to 2021, showing that less than 10% of the included studies used this research method.

Figure 9 illustrates that *Observation* emerges as the most used data collection method within ECEC research from 2006 to 2021. *One-to-one interviews* and *video* are the second and third most used methods (between 400 and 700 studies). Because *video* and *field notes* are technically supported as observation methods, the use of *observation* can be considered predominant, reported a total of 1581 times. *Questionnaires*, *focus groups*, and *field notes* have all been used in over 200 studies during these years. Less-used methods within ECEC research are *hypothetical scenarios* and *school/college records*; all were used in less than 10 studies.



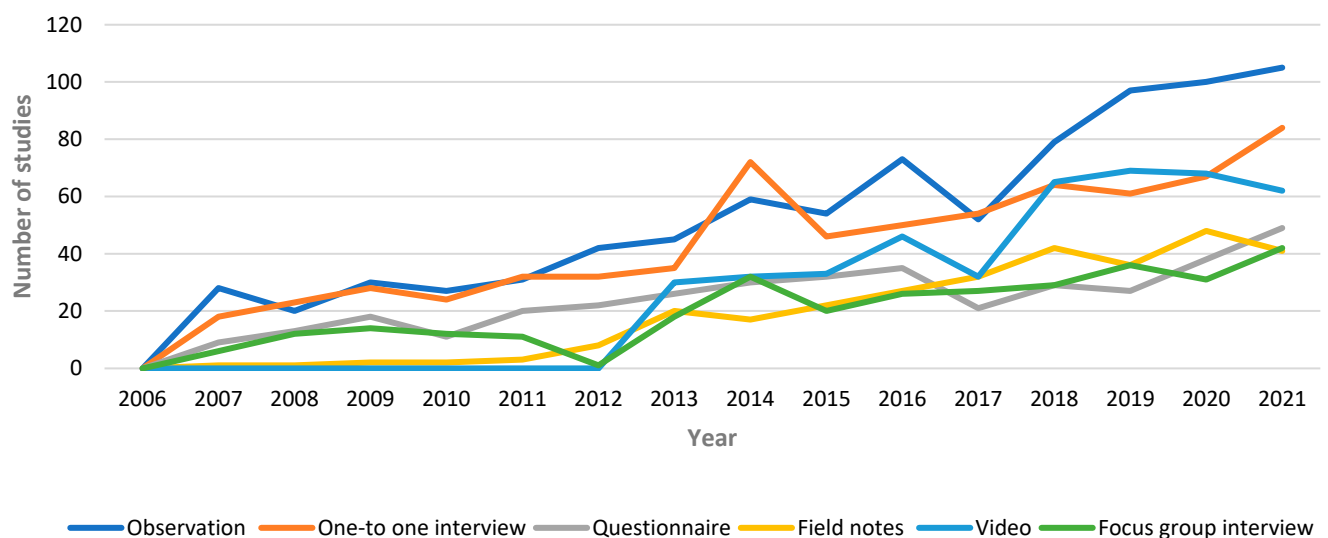


**Figure 8.** Proportion of studies using different research methods. Note: Data are only available from 2013 to 2021. Review/mapping is only reported from 2015. Single coding.



**Figure 9.** Frequency of data collection methods (summarised). Note: Literature search reported from 2016. Collection of data from ECEC, sound recording, video and official documents reported from 2013. Language proficiency test reported from 2017. School/college records from 2006 to 2020. Other from 2013. Multiple coding.

As illustrated in Figure 10, *Observation* has been the most prominent data collection method for most of the years between 2006 and 2021. Only in 2014 were *one-to-one interviews* used more often, although in 2008, 2011, and 2017, they were used almost as much as observation. From 2015 to 2021, studies using *observation* increased from 54 to more than 105. *One-to-one interviews* and *video* are the second and third most reported data collection methods. The use of *questionnaires* as a data collection method was, in 2021 and summarily between 2006 and 2021, the fourth most frequently used data collection method within ECEC research. *Field notes* and *focus group interviews* as data collection methods show an overall increase in the number of studies from 2006 to 2021. Overall, *observation* has been the dominant method of observation each year since 2013, considering that *video* and *field notes* are part of this method.



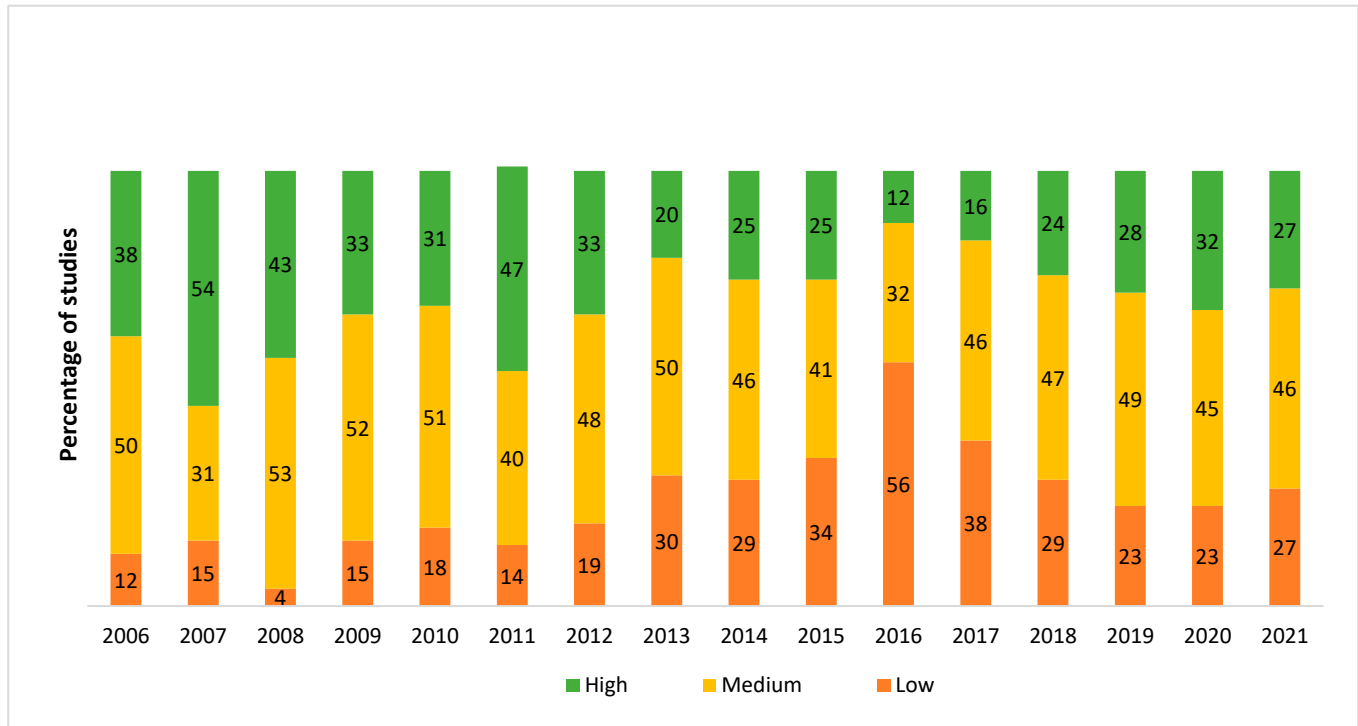
**Figure 10.** Frequency of the six most prominent data collection methods. Note: Video as a response category was included in 2013. Multiple coding.

#### 4. What are the trends regarding the quality of the publications?

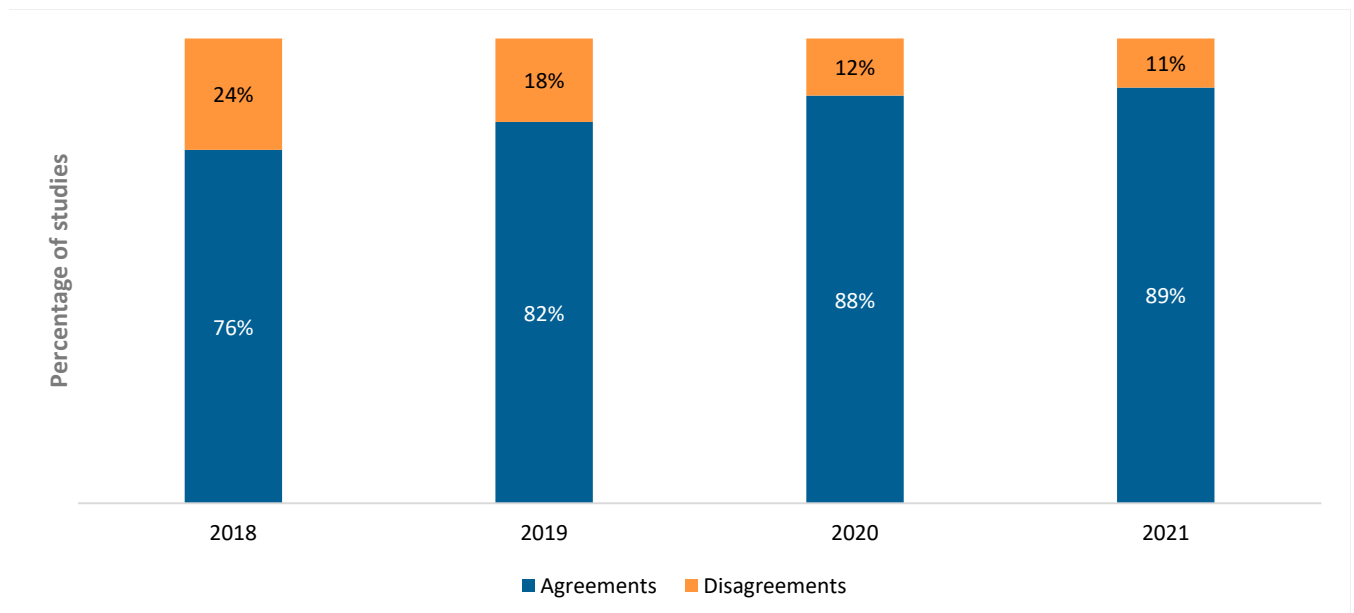
This section presents the results of the quality assessment as reported in the NB-ECEC's annual reports. Figure 11 presents the proportion of studies per year rated as high, medium, or low quality.

From 2006 to 2021, the proportion of medium quality has varied from 31% in 2007 to 53% in 2008; in the years 2006, 2008, 2009, 2010, and 2013, about 50% of the studies were rated as medium quality. Low quality has varied from 4% in 2008 to 56% in 2016. From 2018 to 2021, the proportion of low-quality differed from 23% to 29%. In 2007, the proportion of high-quality rated studies was 54%, while in 2016, only 12% were rated in this category. As described in the methods section, the quality of the included studies has been evaluated by two independent reviewers as either high, medium, or low. As we do see some variation in the quality assessments of the NB-ECEC reports (Figure 11), it is relevant to investigate the level of agreement between the two raters by assessing the inter-rater reliability (IRR), a specific statistical measure of agreements between two or more raters or evaluators. IRR can be calculated using various formulas, but in the simplest form, it can be presented as a percentage agreement [34]. As IRR is not among the variables presented in the annual NB-ECEC reports, it has not been possible to obtain a comparable account of disagreements between reviewers for all years. It seems, based on our inquiries with previous project owners, that the practice of resolving disagreements has been solved a bit differently, such as with discussions between the two reviewers or by involving a third reviewer. Therefore, we are only able to present a comparable IRR record for the last four years. In the context of the NB-ECEC database, where both studies rated as medium and high quality are included and studies rated as low quality are excluded, it appears most relevant to refer

to only two categories of rater conclusions, namely (i) included or (ii) excluded. These are the cases where a third reviewer has been involved. Figure 12 presents the inter-rater reliability for the last four years as percentage agreements on inclusion vs. exclusion in the NB-ECEC database.



**Figure 11.** Proportion of studies rated as high, medium, or low quality. Note: Single coding.



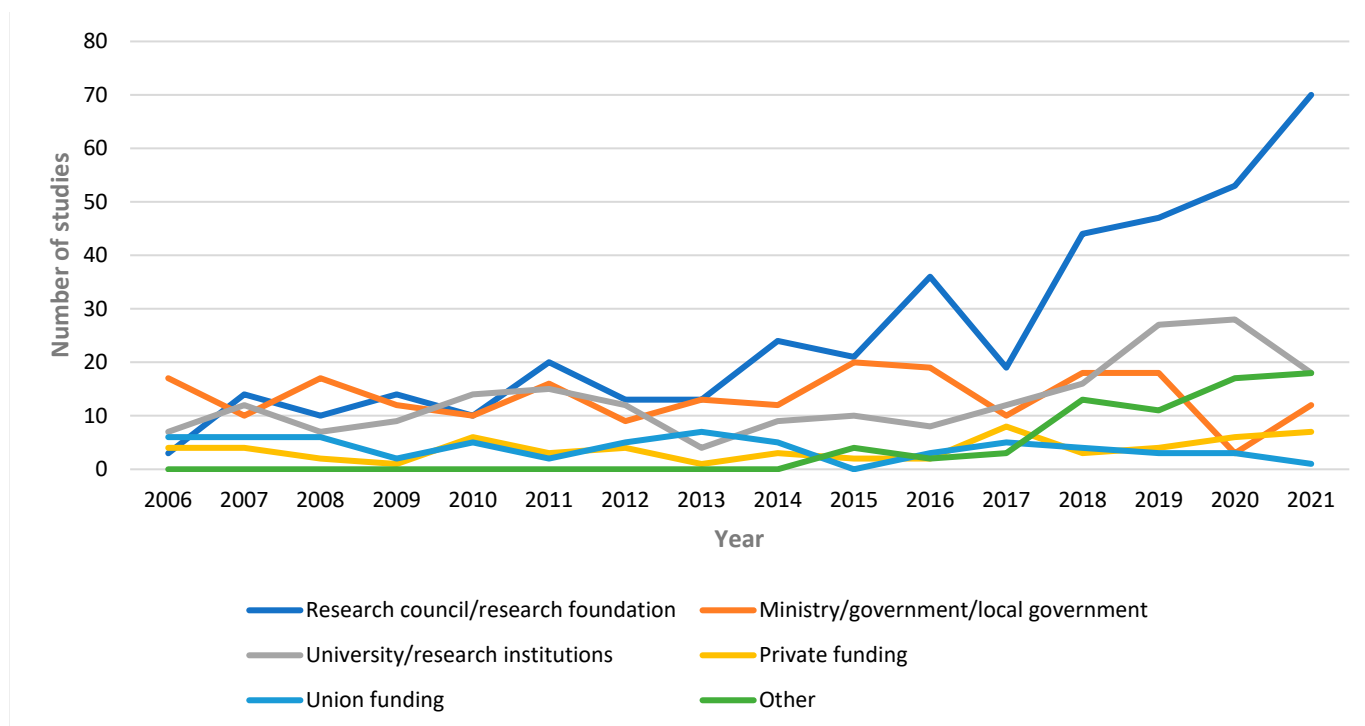
**Figure 12.** Inter-rater reliability (IRR) shown as the percentage of agreements vs. disagreements. Note. Agreement/disagreement on high/medium quality (included in NB-ECEC (studies rated as high or medium quality are published with references and a summary in the NB-ECEC database)) vs. low quality (not included in NB-ECEC). Data before 2018 were not available. Single coding.

As Figure 12 reveals, the IRR ranges from 76% in 2018 to 89% in 2021, indicating a steady increase in the IRR during these four years when it comes to agreement concerning low quality (assessment) on the one side and medium and high quality on the other.

#### 5. What are the trends concerning research funding?

This section presents information on the number of studies funded by six reported sources.

Figure 13 indicates a steady increase from 2013 to 2021 in studies funded by a *research council/research foundation*, with a noticeable steep slope over the last four years. Funding from a *ministry/government/local government* appears relatively stable over time but with a clear decline between 2019 and 2020. Funding from *university/research institutions* improved continuously up until 2020, followed by a decrease in 2021. Funding from *other* sources occurred for the first time in 2014 and increased clearly from 2017 to 2021, while *union funding* has a relatively flat curve showing some decrease from 2020 to 2021, with *private funding* increasing slightly from 2013 to 2021.



**Figure 13.** Funding sources for the studies. Note: Multiple coding.

#### 4. Discussion

Based on a review of 1887 annual NB-ECEC reports from 2006 to 2021, our study offers insights into trends in Scandinavian empirical ECEC research encompassing publication volume, language of publication, topic studied, methodological approaches and assessed study quality.

Our findings indicate that the number of empirical ECEC studies in Scandinavian countries has witnessed a considerable increase in the volume of publications from 2006 to 2021. The increase in the number of publications indicates that the call for more ECEC-related research in Scandinavian countries, as proposed by Holmgren [19], Jensen and Würz Rasmussen [20], and Jespersen [35], may be gradually being met. However, the three countries, Denmark, Sweden, and Norway, differ in the number of published studies. This study revealed that Sweden contributes the highest number of studies, followed by Norway, while Denmark has a lower publication rate in the field of ECEC services. This could be explained by the fact that Danish researchers have less dedicated time for research. The higher publication rate in Sweden compared to Norway may be attributed to the larger population size in Sweden.

The proportion of studies published in English has consistently increased from 2006 to 2021, with over 50% of studies published in English every year since 2015. This rise can be partially attributed to the active involvement of Scandinavian ECEC researchers in international projects and research networks, where English serves as the common language. The incorporation of OECD countries in research efforts and an increasing emphasis on international collaboration, driven by political guidelines for the internationalisation of Scandinavian research, may also contribute to this trend [36]. Another explanation may stem from changes in the NB-ECEC literature search methodology from 2018 to 2021. This adjustment entailed expanding the search string with additional English keywords and conducting searches across multiple international databases, likely resulting in the identification of more studies published in English.

Examining the predominant topics in Scandinavian ECEC research reveals a substantial increase in the focus on pedagogical practices and teaching and learning, aligning with the perspectives of Holmgren [19] and Åsén et al. [28]. Additionally, organisation and assessment consistently emerge as primary areas of focus. However, we found a lack of studies focusing on topics such as economics, teacher careers, and classroom management. The lack of studies focusing on economics may be attributed to the robust funding of ECEC in Scandinavian countries despite parental fees. Recognition of teacher careers is growing, especially in the context of structuring master's studies for ECEC teachers. The apparent oversight of classroom management may be associated with a broader tendency to place less emphasis on learning support in Scandinavian ECEC, as highlighted by Broström, Einarsdottir, and Pramling Samuelsson [2] and Einarsdottir et al. [1]. Unexpectedly, play practices, despite their central role in Scandinavian ECECs, according to Jensen [8] and Urban et al. [6], are inadequately represented in studies. Moreover, the categorisation of numerous studies as "*other*" suggests that the predefined categories in the NB-ECEC may not comprehensively capture the diverse research topics within the Scandinavian ECEC. Notably, parental cooperation, crucial in ECEC provisions, was only introduced as a category in 2021 [37,38]. Similarly, the category "*minorities*", along with "*well-being*" and "*sustainability*", debuted in 2021. This underscores the need for more nuanced response categories to accommodate the growing interest in new topics, endorsing the addition of supplementary categories.

In terms of methodological approaches within ECEC research, our findings reveal a prevalent reliance on qualitative research. This emphasis brings attention to the need for more quantitative research in the field, following recommendations by Jarvie [39]. The dominance of qualitative research methodologies can be traced back to a longstanding tradition within the field, especially within teacher education, where methodologies have traditionally preferred understanding and interpreting impacts rather than quantifying them. The enduring influence of past value-based and ideological debates is discernible in the choice of research methods, as evidenced in the Norwegian context [40].

In terms of study design, our findings indicate that ethnographic, case studies, observational studies and view studies are the most employed, thereby dominating the research area in this period. However, there is a noticeable lack of studies utilising randomised controlled trials (RCTs) and longitudinal research designs. One explanation for this may be the high costs and resource requirements associated with conducting randomised controlled trials (RCTs) and longitudinal research designs in ECEC studies. However, this misalignment with the call for more diverse research designs, as emphasised in previous reviews [8,17,20,22,25,35], also raises questions about the main culture and epistemological views among ECEC scholars.

In terms of data collection methods used in ECEC research, observation, one-to-one interviews, and video have remained relatively stable. This raises the question of why ECEC researchers in Scandinavia show a preference for research questions requiring study designs relying on observation, interviews, or video data rather than focusing on questions about specific practices or interventions yielding positive outcomes. The limited use of tests as a data collection method may be related to an overrepresentation of qualitative

studies and an underrepresentation of quantitative studies. This underscores the need for researchers to formulate questions that focus on the effects of interventions. To advance knowledge in the ECEC field and enhance the quality of ECEC provisions, future research efforts should consider incorporating tests to assess the efficacy of various interventions and pedagogical practices. In acknowledging the necessity for studies examining the effects of pedagogical activities on learning outcomes, as emphasised in previous reviews [28,35,41], the call to diversify research designs and methodologies remains vital for a comprehensive understanding of the impact of different pedagogical practices in ECEC settings.

Encouraging a more diverse range of data collection methods, including quantitative assessments, can contribute to a comprehensive and evidence-based understanding of effective practices in Scandinavian ECEC settings.

The findings of this study suggest that the assessed research quality of the included studies varies without a specific pattern over the 16-year period. According to Tod et al. [42], quality assessment is crucial for ensuring the trustworthiness of presented research. However, it can be subjective and prone to bias without a reliable tool, framework, or guidance document.

Findings from the analysis of inter-rater reliability over the last four years reveal an observable increase in the agreement between raters regarding study quality, reaching an acceptable and increasing level. The coding scheme used for quality assessment in NB-ECEC is rooted in the EPPI reviewer system (developed at the University of London) and supplemented with additional criteria specifically designed for qualitative research [33]. This coding scheme is acknowledged as a valid approach and is supported by reviewer training and comprehensive guidance documents, contributing to the robustness and validity of the final quality assessments. Therefore, by employing a valid tool supported by guidance and training, the variation in assessed study quality may not be explained by subjective bias but may be random and influenced by other factors.

Given the 16-year span and the changes in research institutions responsible for assessing quality, it is important to consider whether these changes could have caused the observed variation. However, our findings indicate that despite the same research institute being responsible for assessing quality from 2006 to 2012 and from 2015 to 2017, the variation persists. The findings of this study can be interpreted as a positive response to the call for better-quality research, as emphasised in the literature [18,19,25,26,35,43].

Notably, this study finds a significant increase in research funding. Most studies report receiving support from research councils, followed by educational institutions/research centres. Additionally, the category *others* providing support shows an increasing trend. This may indicate that research support could have influenced the observed increase in the number of publications, especially in relation to English language publications. In other words, research support seems to promote increased publishing.

In conclusion, we can assert that our findings suggest the need for methodological and thematic diversity in future research to offer a more holistic understanding of Scandinavian ECEC provisions.

### *Limitations*

This study has several limitations that need to be considered when interpreting the results. From 2006 to 2021, changes in the institutions responsible for the annual review led to modifications in the searches for relevant studies, focusing on empirical studies in Scandinavian ECEC research. For instance, the search strings were expanded from 2018 to 2020 to include more English terms for ECEC. This suggests that there might be an unknown number of Scandinavian studies published in English before 2018 that were not included in the analysis.

Furthermore, alterations in the eligibility criteria between 2006 and 2021 could contribute to the inclusion or exclusion of certain studies. Some studies that should have been included may have been left out, and vice versa. Additionally, information on the

methodology used in the years 2006 to 2012 was not recorded until 2013, leading to missing data on the methods employed during that period.

Another limitation that must be highlighted is the categorisation of topics. Since the categories related to the study topic are large and overlapping, there may be areas that are not adequately covered. Consequently, further research is required to gain better and updated insight into the themes and topics that were not captured adequately and to explore the gaps that might arise due to limitations or inadequacies in the coding system used.

## 5. Conclusions and Implications

Drawing upon data from 1887 studies included in the annual reports of the NB-ECEC, this study maps research trends and identifies gaps in Scandinavian ECEC research. The findings not only outline areas for development but also underscore considerations for future research in the field.

Key messages:

- Growth and globalisation: The number of empirical ECEC studies in Scandinavia has notably increased, particularly from 2006 to 2021. We found an increase in studies published in English since 2015, reflecting an era of international collaboration and heightened involvement with OECD countries.
- Focused and unexplored themes: While pedagogical practices and teaching and learning have received due attention, there is a lack of research on topics like economics, teacher careers, and classroom management. Additionally, there is a need for more studies investigating play practices. However, more studies are needed to explore the variation in different themes within the Scandinavian ECEC provisions that are not addressed in the annual NB-ECEC reports.
- Quality assessment and funding of studies: The increasing rise of external funding indicates a positive path in research quality. The dominance in international peer-reviewed journals signifies higher standards, aligning with calls for enhanced research quality within the field.
- Methodological landscape: The dominance of qualitative data has influenced the methodological landscape, emphasising the demand for increased quantitative data. The lack of randomised controlled trials (RCTs) and longitudinal studies in ECEC research is crucial to diversifying research designs and methodologies in ECEC research.
- Critical gaps in professional development: Surprisingly, there is a limited surge in research activities around professional development and teacher education.
- A call for holistic approaches: As we map the path forward, there is a call for a more holistic approach to ECEC research in the Scandinavian countries. Integrating a varied selection of data collection methods will be crucial to addressing challenges related to the need for more knowledge about ECEC provision.

This study identifies trends and gaps, serving as a guideline for future examinations. A review of 16 years of research on ECEC provisions offers potential value to various stakeholder groups.

For policy development, an increase in studies assessing the impact of interventions in ECEC can significantly enhance outcomes for children. Understanding effective interventions can guide the design of future programmes for even greater success.

For researchers, this study offers a comprehensive overview of key topics requiring further exploration. While most studies focus on themes like pedagogical practices and teaching, there is a notable gap in research related to play practices. Identifying areas for additional research can guide efforts to address critical gaps.

In the work of Scandinavian ECEC research, this study identified trends and gaps that may serve as a guideline for future exploration. This study also plays a crucial role in raising awareness about the NB-ECEC database among various stakeholders.



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