

Practices for Inclusive Education in Informal Settings: A Scoping Review of the Literature

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Background

Informal Settings: Museums, zoos, days camps, and aquariums are considered to be social institutions which preserve, shape, and re-introduce both historical and current knowledge to communities (Jones & Conaty, 2005) where individuals can participate and engage in informal learning.

Legislation: Informal settings have a duty to be inclusive – in terms of Canadian legislation, the Ontarians with Disabilities Act is in place to improve the opportunities for individuals with disabilities and to develop a reduction and/or prevention in barriers which incurbar full participation (Ontario, 2020). Despite this, institutions have primarily focused on physical accessibility and therefore disadvantages individuals with various disabilities and consequently provides inadequate opportunities for all (Cho & Jolley, 2016; Kaushik, 2003).

Intellectual and Developmental Disabilities (IDD): A cluster of diagnoses characterized by limitations in intellectual and adaptive functioning which impacts multiple domains including personal, social, academic, and/or occupational functioning and represents a larger category that encompasses intellectual disabilities, developmental disabilities, and Autism Spectrum Disorder (ASD) (American Psychiatric Association, 2013; National Institute of Child Health and Human Development, 2016).

Exclusion: Missed opportunities for participation are often experienced by individuals with IDD (Brown et al., 2013). Social exclusion instills a reduced sense of self-efficacy, competency, sense of belonging, empowerment, and a reduced sense of quality of life (Brown et al., 2013; Cobigo et al., 2012). The opportunity for learning, engagement with materials, and a sense of autonomy and education through object manipulation and cognitive stretching is important in the developmental experiences of children with IDD.

International Classification of Functioning, Disability and Health (ICF): The World Health Organization (WHO) published a version of the ICF specific for children and youth (CY) in which characteristics of children from infancy to adolescence are further documented (WHO, 2007). The ICF-CY is a social model of disability which encompasses multiple domains of functioning including mental functioning, a physical domain, environmental domain, and participation domain.

Purpose: Individuals who live with disabilities participate less often in learning experiences that occur outside of formal classroom settings and are disadvantaged when unable to engage in full participation in informal educational opportunities (National Research Council, 2009; Wagner et al., 2002). As such, informal educational opportunities need to ensure their programming is inclusive to allow for accessible learning opportunities for individuals living with disabilities. This scoping review will utilize the ICF-CY as a theoretical lens to examine the practices for inclusive education for children with IDD in informal settings.

Methods

Research Question: *What practices have been used to promote inclusion of people with IDD in informal educational contexts?*

The methods for this scoping review were informed by Arksey and O'Malley's five-stage methodological framework (2005). Further, this review was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

Inclusion and Exclusion Criteria

(1) included empirical data, (2) children as participants (individuals under ≤ 21 years old), (3) participants with an IDD; (4) studies which took place in informal education settings (e.g., camps, museums, horse barns, skills groups, zoos, and tracks); (5) studies that measured attendance, perceived effectiveness of the policies and practices, perceived effectiveness for participant families in terms of enjoyment and learning, level of engagement in the programming, and other outcomes pertaining to full inclusionary practices; and (6) data collected from participants; however, additional data may be collected from other study informants (e.g., parents, caregivers, and teachers). All research approaches and designs were included in this review. Studies were excluded if they (1) were not written in English; (2) focused exclusively on physical treatments or outcomes, such as measuring gait patterns or measuring changes in body mass index; (3) did not pertain to inclusive practices; (4) were centred in formal educational settings (e.g., public schools, private schools, and home schooling).

Search Strategy and Selection of Studies

A search of the literature from 2005-2020 was conducted in the following five electronic databases: (1) The Education Resource Information Center (ERIC), (2) Web of Science, (3) Academic Search Ultimate, (4) PsycINFO, and (5) ProQuest Dissertations and Theses Full Text databases. Keywords for disability were paired with keywords for informal education with the Boolean operator *AND* (Table 1). Reference lists of included studies were hand-searched and identified studies were added directly to full text screening.

Data Extraction

A data extraction form was developed on Covidence (2021) and was piloted by the primary author (JR) on 20 randomly selected studies and then refined. All search results were exported to Covidence (2021) where duplicates were removed. Initially, two authors (JR and MA) independently screened all titles and abstracts, resulting in 90.7% agreement. The full text of all articles considered for inclusion were independently reviewed by the same two authors resulting in 68.1% agreement. Disagreements in both screening stages were discussed; inclusion and exclusion criteria were refined and consensus on all included full-text articles was reached (Figure 1).

Two authors independently coded the titles, type of informal setting, study approach, types of data collected, who the respondents were, total number of participants (number of boys and girls), number of typically developing participants (number of boys and girls), the age range of participants, the diagnoses included in the study, the practices used to promote inclusion, the theoretical models used to inform the policies and practices at the informal site, and the outcome measures.

Results

Characteristics of Included Studies

A total of 40 studies were included in this scoping review. The majority of these studies were conducted in the United States (72.5%), followed by European countries (15.0%), then Canada (10.0%). Further, most studies were conducted in recreational camps (67.5%; Figure 2); only two studies were conducted at multiple sites. Fifteen articles within this review explicitly rooted their studies within theoretical models. These theoretical models ranged from psychological- and sociological-based models such as Bandura's personal self-efficacy belief (1977), the theory of psychological sense of community (McMillan & Chivas, 1986), and social identity theory (Haslam et al., 2009) to therapeutic frameworks such as experiential learning theory (Kolb, 1984), and humanistic frameworks (Robin, 2001) which in turn informed the art therapy theoretical framework and the museum education theoretical framework. Furthermore, some articles used specific frameworks including the SENSE theatre approach (Corbett et al., 2014), which incorporates both behavioural strategies and theatrical techniques into a model, while the LET US Play principles is a framework which has shown to be effective in increasing physical activity and decreasing sedentary time for children (Brazendale et al., 2019). The variability between theoretical frameworks extends throughout multiple domains of functioning, including the physical, psychological, and sociological domains which further illuminates the variability in research on inclusion and participation for children with IDD in informal educational settings.

REFERENCES

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19-31. Doi: 10.1080/1364557032000119616.

Brown, L., Hutton, C., & Emerson, E. (2013). Quality of life indicators for individuals with intellectual disabilities: Extending current practice. *Intellectual and Developmental Disabilities*, 51(5), 316-332. Doi: 10.1352/1944-9556-51.5.316.

Cho, H., & Jolley, A. (2016). Museum education for children with disabilities: Development of the nature senses traveling trunk. *Journal of Museum Education*, 41(3), 220-229. Doi: 10.1080/10598650.2016.1193313.

Cobigo, V., Ouellette-Kuntz, H., Lysyght, R., & Martin, L. (2012). Shifting our conceptualization of social inclusion. *Stigma Research and Action*, 2, 75-84.

Covidence. (2021, March 19). *Better Systematic Review Management*. <https://www.covidence.org/>

Jones, R.R., & Conaty, G.T. (Eds.). (2005). *Looking reality in the eye: Museums and social responsibility*. Calgary, Alberta: University of Calgary Press.

Kaushik, R. (2003). Access denied: Can we overcome disabling attitudes? *Museum International*, 51(3), 48-52. Doi: 10.1111/1468-0033.00217.

Ontario. (2020, March 3). *Ontarians with Disabilities Act, 2001, S.O. 2001, c.32*.

National Institute of Child Health and Human Development. (2016, December 1). *Intellectual and developmental disabilities (IDDs): Condition Information*. <https://www.nichd.nih.gov/health/topics/ids/conditioninfo/default>.

National Research Council. (2009). *Learning science in informal environments: People, places and pursuits*. Washington, DC: The National Academies Press.

Tricco, A.C., Lilie, E., Zarin, W., O'Brien, K.K., Colquhoun, H., Levac, D., Moher, D., Peters, M.D.J., Horsley, T., Weeks, L., Hempel, S., Aki, E.A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M.G., Garritty, C., ... Straus, S.E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and Explanation. *Annals of Internal Medicine*, 169, 467-473. Doi: 10.7326/M18-0850.

Wagner, M., Cadwallader, T.W., Marder, C., Newman, L., Garza, N., & Blackorby, J. (2002). *The other 80% of their time: The experiences of elementary and middle school students with disabilities in their non-school hours*. Menlo Park, CA: SRI International.

World Health Organization (WHO). (2007). *International classification of functioning, disability, and health—children and youth*. Geneva: Author.

Results

Table 1
Search Terms

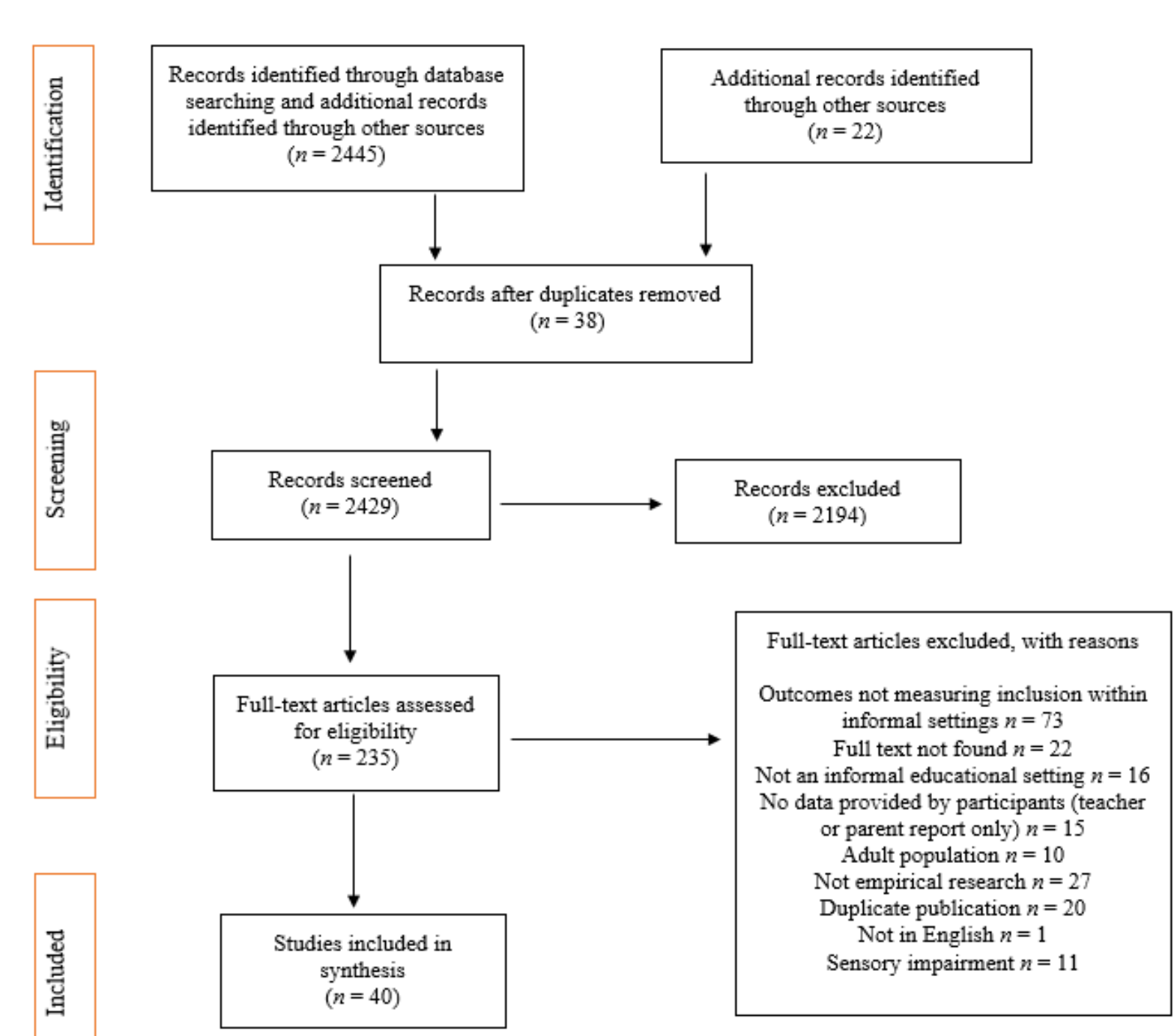
Concept	Terms
Diagnosis of Disability	disab* OR "mild* handicap*" OR "moderate* handicap*" OR "severe* handicap*" OR "mental* handicap*" OR "multi* handicap*" OR "profound handicap*" OR "developmental* handicap*" OR "developmental* delay*" OR "delay* development" OR "mental* delay*" OR "intellectual* delay*" OR "mental* impair*" OR "intellectual* impair*" OR "cognitive impair*" OR "intellectual disab*" OR "learning disab*" OR "autis*" OR "pervasive developmental disorder*" OR "pervasive developmental delay*" OR "pervasive developmental disab*" OR asperger* OR Rhett* OR "Fragile X" OR "childhood schizophrenia" OR "Down* Syndrome" OR "Tourette" OR "Kleefstra" OR "cerebral palsy" OR "spine bifid" OR "fetal alcohol*" OR "visual impair*" OR "hearing impair*" OR "genetic disorder*"
Informal Educational Settings	"Museum*" OR "Informal Science cent*" OR "Aquarium" OR "Camp" OR "Zoo" OR "Galler*"
	OR "Informal science institution"

More than half of the studies employed quantitative approaches (45.0%) using surveys and diagnostic measures, whereas qualitative studies (17.5%) used interviews, observations, and photos. Mixed methods studies (37.5%) used a multitude of these methods for data collection.

Demographics of Participants

A total of 1,489 participants were involved in included studies. Of the 1,489 participants, 499 were typically developing and 990 children had one or more IDDs. Further, the most common diagnoses among atypically developing participants were ASD ($n = 19$), attention deficit hyperactivity disorder (ADHD) ($n = 8$) and cognitive IDDs ($n = 7$) (Figure 3).

Figure 1
PRISMA-ScR Flow Diagram (Adapted from Moher et al., 2009)



Practices used to Promote Inclusion

Mental Functioning

The practices used to promote inclusion within the mental functioning domain included attention training, coping strategies training, and receiving one-on-one support from peers, paraprofessionals, and coaches. One study utilized coping strategies, while another single study utilized a pairing strategy which paired typically developing children with atypically developing children to learn behavioural strategies. Three studies provided one-on-one support for children with IDD from paraprofessionals, camp counsellors, and/or inclusion counsellors.

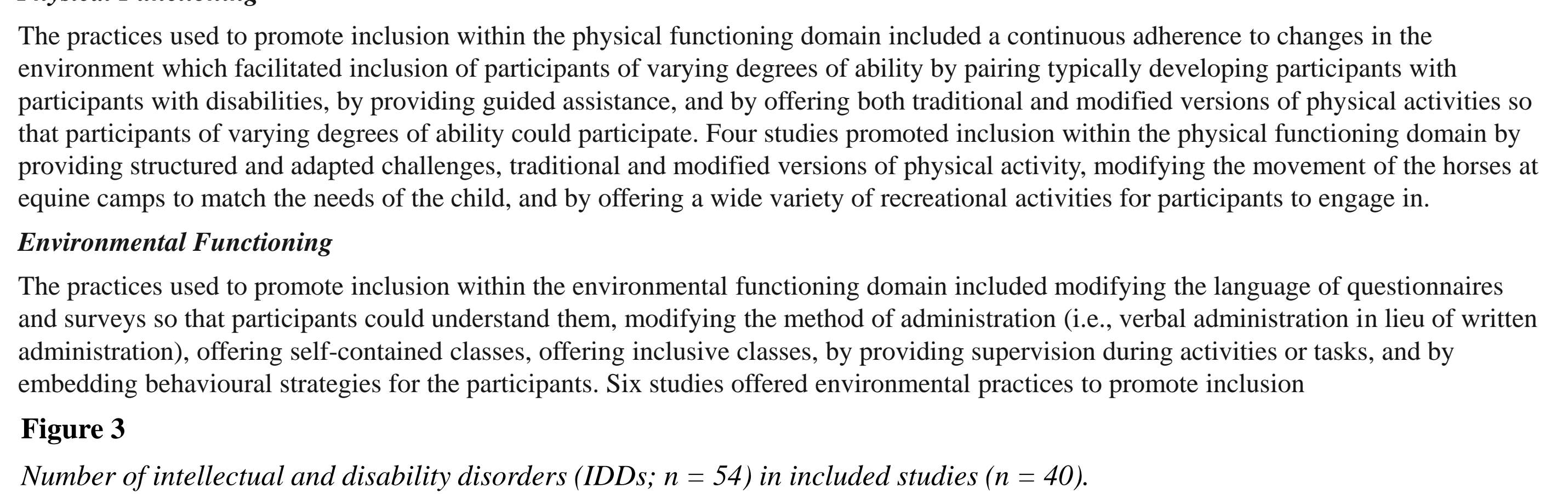
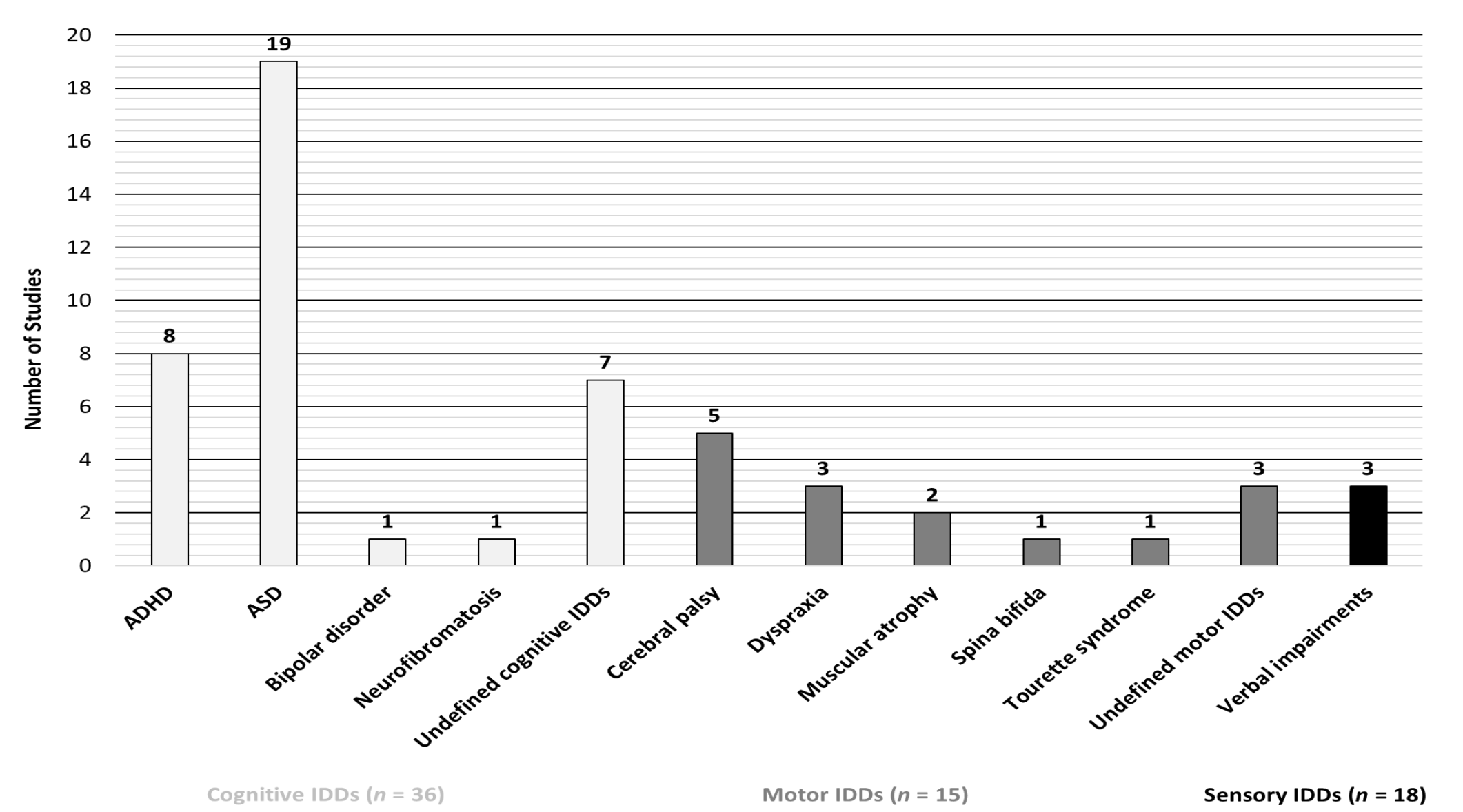
Physical Functioning

The practices used to promote inclusion within the physical functioning domain included a continuous adherence to changes in the environment which facilitated inclusion of participants of varying degrees of ability by pairing typically developing participants with participants with disabilities, by providing guided assistance, and by offering both traditional and modified versions of physical activities so that participants of varying degrees of ability could participate. Four studies promoted inclusion within the physical functioning domain by providing structured and adapted challenges, traditional and modified versions of physical activity, modifying the movement of the horses at equine camps to match the needs of the child, and by offering a wide variety of recreational activities for participants to engage in.

Environmental Functioning

The practices used to promote inclusion within the environmental functioning domain included modifying the language of questionnaires and surveys so that participants could understand them, modifying the method of administration (i.e., verbal administration in lieu of written administration), offering self-contained classes, offering inclusive classes, by providing supervision during activities or tasks, and by embedding behavioural strategies for the participants. Six studies offered environmental practices to promote inclusion

Figure 3
Number of intellectual and disability disorders (IDDs; n = 54) in included studies (n = 40).

Results Continued

Participation Functioning

The practices used to promote inclusion within the participation functioning domain included offering social skills training, vocational training, instructional support, use of small groups accompanied by facilitators trained in inclusion and disabilities, individualization of goals, and access to physical and occupational therapists. Six studies offered practices to promote participation inclusion.

Outcomes Measured in Studies

Quantitative Outcomes

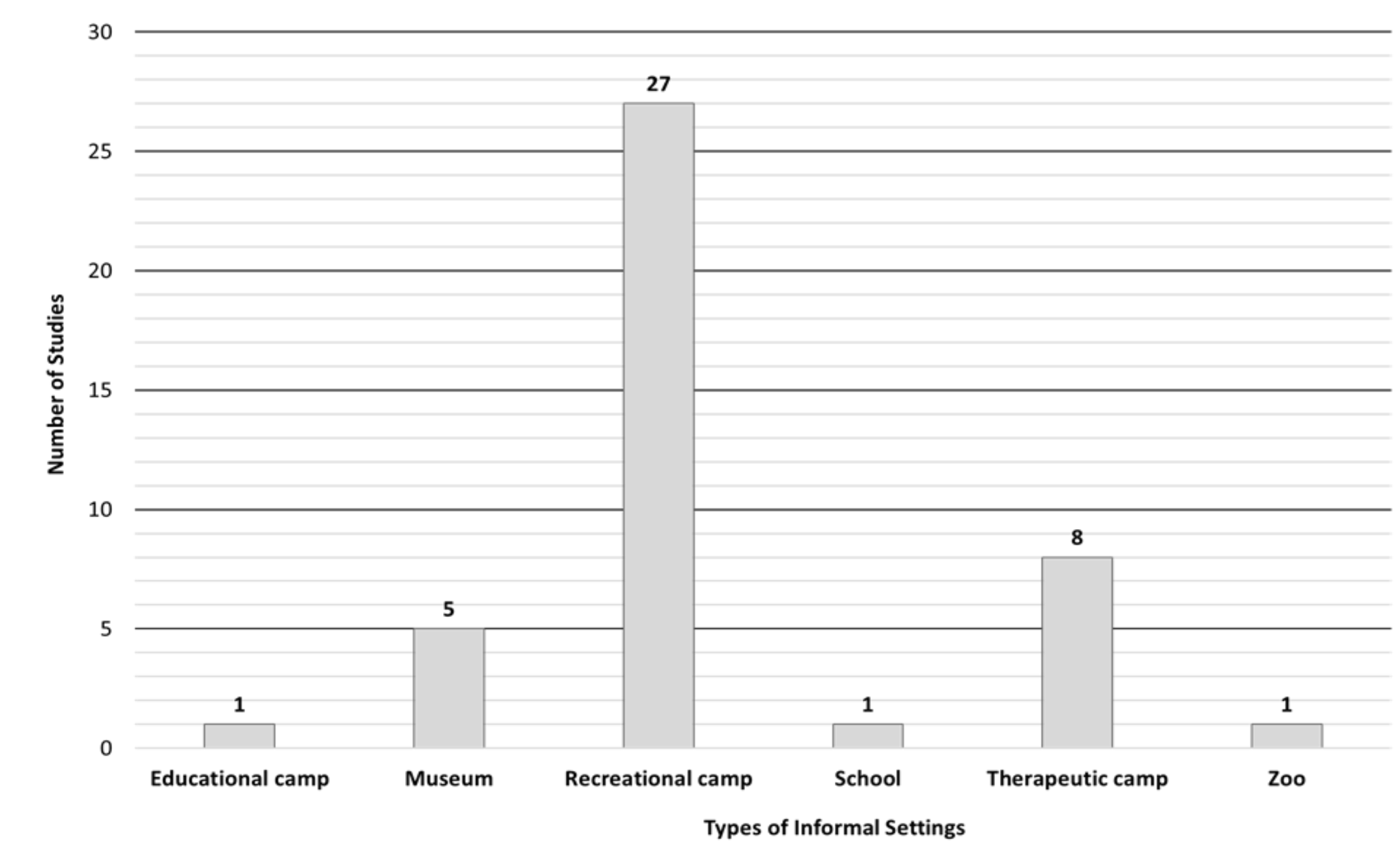
Questionnaires, surveys, and various measures were used for the purpose of data collection for the quantitative articles. Quantitative data collection was completed using behavioural measurements, affective measurements, social-emotional measurements, self-perception/self-efficacy measurements, and motor movement.

Participants across studies participated in varying informal settings including opportunities for rock climbing, horseback riding, attending a zoo, and attending camps, to name a few. Different activities offered varying experiences and opportunities for development. For example, participants rated that the opportunities for skill development were greater in more structured activities. At camps, participants rated higher self-perceptions of social acceptance and quality of life at post-camp and at follow up.

Qualitative Outcomes

A total of 26 studies provided qualitative data which can be categorized into three major themes: (1) sense of belonging; (2) self-esteem/self-perception; and (3) improved social and cognitive skills. Most studies reported more than one of these themes.

Figure 2
Type of informal settings (n = 43) in included studies (n = 40).



Discussion

A broad range of inclusive practices found within this review highlighted mental, physical, environmental, and participatory functioning of children with IDDs at informal educational sites. The literature indicates that informal educational settings are social institutions where participants can participate and engage. The findings of the studies point to a sense of belonging, increased confidence, self-esteem, and self-perception, and improved social and cognitive skills are further supported by the literature that suggests that experiencing social exclusion leads to the opposite of these outcomes: a reduction in self-efficacy and competency, and a reduction in the personal sense of belonging.

Thematic analyses of the studies in this review determined that participants experienced a wide range of experiences including:

- 1) A sense of belonging
- 2) Decreased stress
- 3) Increased sense of safety and support, self-esteem, and self-perception
- 4) Improved social and cognitive skills including sociability, and higher-level thinking.

Social inclusion, which centres around the themes of relationships, acceptance from both society and peers, social competence, and opportunities for participation was bolstered at the informal settings presented in this review due to inclusionary practices within the physical, environmental, mental, and participatory domains.

The ICF-CY (WHO, 2007) outlines four domains of functioning. Studies within this review demonstrate various strategies and practices that can be identified within each of the four domains of functioning as outlined by the ICF-CY (WHO, 2007). However, the practices within the environmental and physical functioning domains outweighed the practices within the participation and mental functioning domains which speaks to a need for further research evidence as to the ongoing need for facilitators in these areas of functioning for children with IDD.

From this review there is evidence to suggest that the theoretical frameworks utilized in the current body of research are broad and not utilized by most published studies. Additionally, the available literature points to strengths and creates an understanding as to the importance of full inclusion and participatory practices at informal educational settings for children with intellectual and developmental disabilities such that full participation and inclusion has numerous benefits, both physically and psychologically, for children who are able to participate.

The numerous benefits of full inclusion point to a continued need for inclusion to be translated not only within informal educational settings, but also within community settings and formal educational settings. As such, policies and practices should continue to be developed in accordance with provincial, national, and international legislature pertaining to full inclusion and participation for children with IDD into the community. The domains as outlined by the ICF-CY (WHO, 2007) is a useful foundation for the developmental of policies and practices as they pertain to disability.

This scoping review offers an in-depth understanding as to the practices for inclusive education in informal settings. However, there are limitations within this article. As this was a scoping review, a quality assessment of the included articles was not performed. Rather, all articles, including the grey literature, were included if the articles met the eligibility criteria. Furthermore, although this was a scoping review on the practices for inclusive education, not all articles included these practices. As access to the raw data was not available, it is possible that some studies utilized inclusive practices but that they were not reported by the authors and as such, may be missing from this review. Furthermore, as 'self as respondent' was an inclusion criterion for the study, further studies are available within the literature which also describe inclusionary practices at informal settings for children with IDD which have not been included within this study. These studies may contain staff perspectives or family perspectives that were not captured within this review.

This review provides an in-depth understanding of the current practices for full participation and inclusion for children with intellectual and developmental disabilities at informal educational sites. Both qualitative and quantitative outcomes are identified in the literature, with some current literature utilizing a theoretical framework in which to drive the research.