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Evidence for Implementing Tiered Approaches in School-Based Occupational Therapy in Elementary Schools: A Scoping Review

Helen Lynch, Alice Moore, Deirdre O'Connor, Bryan Boyle

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Importance: Internationally, it is suggested that school-based occupational therapy (SBOT) has an important role in supporting inclusion in educational settings. In SBOT, multitiered service delivery models are identified as a way forward to maximize school inclusion. Therefore, identifying evidence for the implementation of tiered interventions in SBOT is vital.

Objective: To identify and map evidence in the occupational therapy literature relating to SBOT interventions delivered in elementary schools for all children, for those at risk, and for those with identified diagnoses.

Data Sources: Peer-reviewed literature published in 14 occupational therapy journals between 1990 and 2020, indexed in the EBSCO*host* database.

Study Selection and Data Collection: Included studies were those within the scope of SBOT that reported on school occupations and focused on elementary school–age children (excluding kindergarteners or preschoolers).

Findings: Forty studies met the criteria. Individual-tier intervention studies ($n = 22$) primarily reported direct interventions with children at risk or with identified diagnoses (Tier 2 or Tier 3), focusing mostly on remedial approaches. None adopted a whole-school approach. Despite handwriting and self-regulation being dominant areas of concern, these studies were not explicitly related to inclusion outcomes. Evidence for implementing multitiered models primarily used indirect, collaborative consultation, embedded in the school context ($n = 18$). These studies identified positive school staff and child outcomes when collaboration was timely, consistent, and authentic.

Conclusions and Relevance: More rigorous individual-tier intervention studies are required to inform the design and implementation of multitiered interventions in SBOT and to support participation and inclusion in schools.

What This Article Adds: This scoping review provides evidence to support occupational therapists' professional reasoning in developing evidence-based, contextual, educationally relevant multitiered models of intervention in SBOT.

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Inclusive education for all is an issue of international concern, reflected in the United Nations Sustainable Development Goals (United Nations, 2015) and enshrined in the Convention on the Rights of Persons with a Disability (United Nations, 2006). *Inclusion* is defined as involving "a process of systematic reform, embodying changes and modifications in context, teaching methods, approaches, structures and strategies in education to overcome barriers" (UN Committee on the Rights of Persons with Disabilities, 2016, p. 3). Moreover, inclusion in education is about overcoming barriers for all children, not just those with disabilities (UNESCO, 2015). Whereas *integration* refers to a process of placing students together in the same setting, inclusion goes further: It involves ensuring that the processes and routines within the setting are designed to maximize participation.

The commitment to inclusion and participation is embedded in the World Federation of Occupational Therapists' (WFOT's; 2016) position statement on

occupational therapy services in school-based practice. In this document, school-based occupational therapy (SBOT) is positioned as an issue of occupational justice, whereby SBOT serves to protect the rights of the child to education "in environments that maximise academic and social development, consistent with the goal of full inclusion" (WFOT, 2016, p. 1). It is significant that the goal of SBOT is to work toward participation by adopting evidence-based, occupation-centered, solution-focused, educationally relevant contextual approaches in a tiered intervention model that addresses all levels of the educational system (WFOT, 2016). Consequently, therapists need to become knowledgeable about multitiered delivery models and interventions that support these aims.

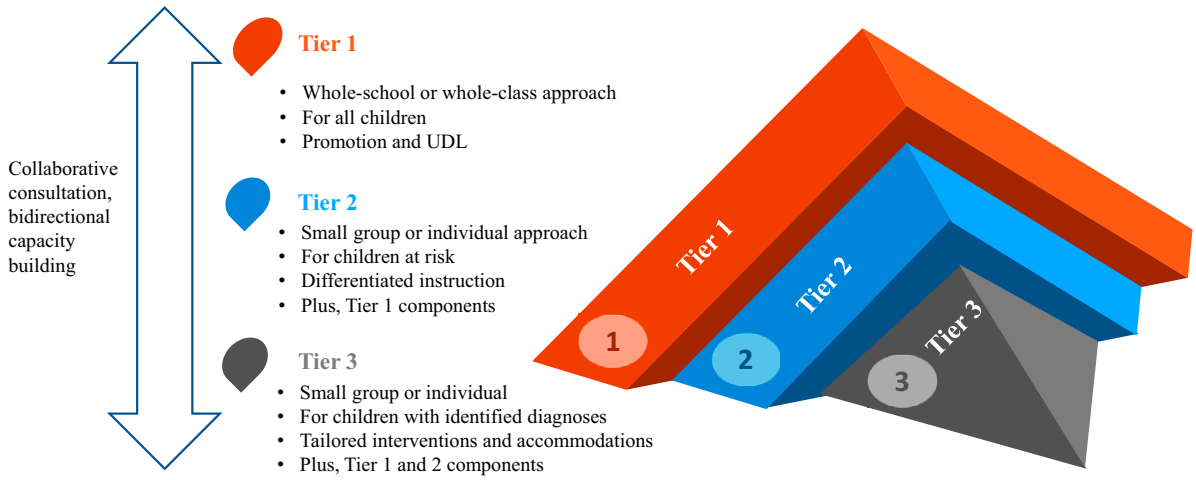
According to WFOT (2016), service delivery in a multitiered model involves three individual and interrelated tiers: universal design for learning (UDL; Tier 1), differentiated instruction (Tier 2), and accommodations (Tier 3). *UDL* refers to the provision of collaborative support for school staff by working on capacity building for curriculum delivery to all students and increasing awareness of student needs. At Tier 2, *differentiated instruction* involves support provided via modification of teaching approaches for students at risk who are unable to respond to UDL. Finally, at Tier 3, *accommodations* refer to the provision of tailored occupational therapy intervention focused on adapting the environment or the learning activity to enable participation (WFOT, 2016). A core feature of tiered models is *collaborative consultation,* which involves bidirectional capacity building and sharing of expertise between occupational therapists and school staff rather than an assumption of occupational therapists' superior knowledge (VanderKaay et al., 2021; Villeneuve, 2009; Figure 1).

However, multitiered models of service delivery for SBOT vary and are emerging internationally in different ways. Multitiered models can have different origins; sometimes they are part of national initiatives such as Response to Intervention (RtI; the United States, e.g., Fuchs & Fuchs, 2006) or the School Inclusion model (Ireland; Department of Education, 2020), and sometimes they are part of a provincial or local initiative specific to occupational therapy, such as Partnering for Change (P4C; Canada; Missiuna & Hecimovich, 2015) or Every Moment Counts (United States; e.g., Bazyk, n.d.). In addition, these initiatives are situated in countries that have different health and educational systems, service delivery, and employment practices for therapists. Such differences influence therapists' scope to deliver tiered models in SBOT (Jongbloed & Wendland, 2002; Kaelin et al., 2019; Salazar Rivera & Boyle, 2020). For example, as a result of insurance and legal systems in the United States, therapists may be limited by prescription requirements relating to Individualized Education Programs, which may in turn restrict their capacity to deliver multitiered models.

In addition, in the international context, tiered interventions are inconsistently characterized in multitiered models (Ebbels et al., 2019). For example, tiers can be described according to child characteristics (e.g., based on learning needs, such as education for all, for those at risk, for those with an identified diagnosis), according to the intervention (e.g., universal, targeted, or intensive), and sometimes in terms of the aim of intervention (e.g., promotion, prevention, or specialist; Ebbels et al., 2019; Lynch et al., 2020). Irrespective of these differences, common features of all tiered interventions are an expansion of service provision beyond children with known disabilities to include those at risk or in the general population in order to support inclusion for all by integrating services in the natural environment in a more timely and efficient way.

As yet, there is a paucity of evidence on occupational therapy practices in implementing multitiered models to support inclusion in schools (Bonnard & Anaby, 2016; Laverdure & Rose, 2012). Although recent

Figure 1. Multitiered model.



Note. UDL = universal design for learning.

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reviews of evidence for SBOT have been conducted for preschool children (Jasmin et al., 2018), for children with disabilities (Anaby et al., 2019), and for SBOT in general (de Oliveira Borba et al., 2020), no study to date has examined SBOT in relation to tiered interventions in elementary schools. Specifically, there is a lack of clarity on service delivery characteristics for SBOT at each individual tier when delivering interventions for all children, for those at risk, and for those with identified diagnoses. Therefore, our aim was to conduct a scoping review of evidence for tiered interventions and multitiered models in SBOT. In doing so, our purpose was to stimulate debate regarding multitiered models of delivery in SBOT and to illuminate the gaps in knowledge in this emerging field. The choice to conduct a scoping review was founded on the rationale that the WFOT (2016) document proposes an international vision for SBOT while also acknowledging the complexity of multitiered models that differ internationally in how they are understood and implemented. Therefore, there is a need to map and synthesize the breadth of evidence from an international perspective to establish "the range and nature of research on a topic" (McKinstry et al., 2014, p. 59) as a preliminary step before further in-depth investigation. We followed the Joanna Briggs Institute's scoping review methodology (Peters et al., 2015) and the Preferred Reporting Items for Systematic Reviews Extension for Scoping Reviews (Tricco et al., 2018).

Method

We conducted this scoping review to explore the current best evidence for SBOT associated with tiered approaches in elementary schools. The rationale for limiting the review to elementary school and excluding kindergarten or preschool is that school starting ages vary internationally, with many countries providing compulsory education only at the primary or elementary school level, not at the preprimary or kindergarten level (UNESCO, 2015). This scoping review followed the five stages developed by Arksey and O'Malley (2005) and further methodological strategies as recommended by the Joanna Briggs Institute (Peters et al., 2015) and Levac et al. (2010).

Stage 1: Identifying the Research Questions

The research questions that guided this scoping review were as follows:

1. What occupational therapy interventions are delivered in elementary schools that address school occupations at different tiers for all children, children at risk, and children with identified diagnoses?
2. What are the characteristics of these interventions and the outcomes?
3. What role does occupational therapy play in delivering tiered interventions and multitiered models?

Stage 2: Identifying Relevant Studies

We searched the literature published between 1990 and 2020 in occupational therapy journals and using EBSCO*host* database. The decision to focus only on occupational therapy journals and this time span was to maximize access to the breadth of SBOT-specific literature, which is a core feature of scoping review methods (McKinstry et al., 2014). Databases were searched for titles and abstracts that contained at least one school-based occupational therapy term and at least one term relating to school occupations or tiered approaches (see Table A.1 in the Supplemental Appendix, available online with this article at https://research.aota.org/ajot).

Primary, secondary, and tertiary search terms were used in various combinations, using Boolean operators. Reference lists of identified studies were manually searched for additional resources (Peters et al., 2015). After duplicates were removed, we screened 249 articles for inclusion (Figure 2).

Stage 3: Selecting Studies

Selected studies were uploaded to EndNote X9 reference management software and exported into Covidence for team screening and selection. Inclusion criteria focused on evidence on the delivery of SBOT to elementary school children. The studies selected addressed individual or multitiered SBOT interventions delivered directly or indirectly to elementary children in the school context. Studies were excluded if they focused on kindergarteners, preschoolers, or secondary students; tool development; clinic-based interventions; occupational therapy student education; gray literature; or conference proceedings. All authors were involved in screening, with titles and abstracts screened independently by two authors, followed by full text screening by two authors; disagreements were discussed with a third author until consensus was reached (Levac et al., 2010).

Stage 4: Charting the Data

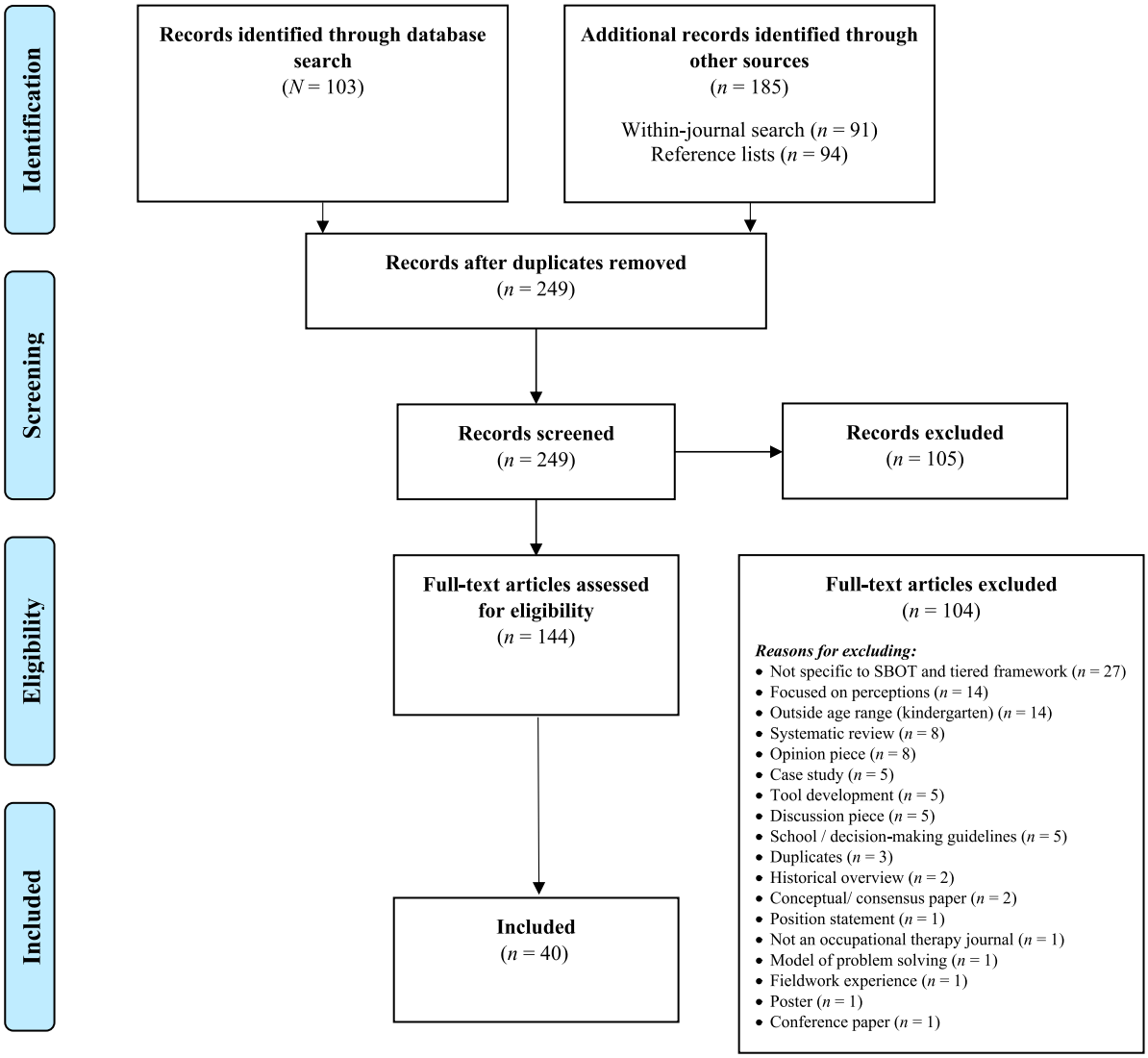
Data were collated and summarized using two data extraction tables: The first table maps the general study design, purpose, key findings, and outcomes (Supplemental Appendix Table A.2), and the second table charts study characteristics according to tiered models in schools (Supplemental Appendix Table A.3).

Stage 5: Collating, Summarizing, and Reporting the Data

Because of the complex and heterogeneous nature of the studies, we implemented a qualitative thematic analysis (Levac et al., 2010). Studies were determined to be tiered or multitiered interventions according to the child characteristics targeted, which is the common identifying feature of a tiered intervention, as outlined in the literature review. Data were extracted and

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Figure 2. Adapted PRISMA flow diagram of study selection process.



Note. SBOT = school-based occupational therapy. Figure format from "Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement," by D. Moher, A. Liberati, J. Tetzlaff, and D. G. Altman; PRISMA Group, 2009, *PLoS Medicine, 6*(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

summarized using the data extraction charts and were described quantitatively and qualitatively. Analysis of studies revealed two main types of studies: individual-tier studies or multitiered studies that focused on examining the implementation of multitiered models in SBOT.

Results

Forty articles met the inclusion criteria and were grouped into individual-tier (n = 22) or multitiered implementation (n = 18) studies. Most studies were published in the *American Journal of Occupational Therapy* (n = 17) and the *Canadian Journal of Occupational Therapy* (n = 7). Most studies originated in the United States (n = 21) or Canada (n = 11), with the remainder from Australia (n = 4), Israel (n = 1), Pakistan (n = 1), Switzerland (n = 1), and the United Kingdom (n = 1; Table A.2). Study designs consisted of empirical evaluation (n = 17); pilot (n = 9); qualitative, consisting of focus groups and participant interviews (n = 4); action research or intervention studies (n = 5); survey methods (n = 3); and mixed methods (n = 2; Table A.2).

Evidence for Individual-Tier Interventions

Tier 1 Interventions

Tier 1 interventions were evident in 6 studies that focused on universal approaches to promote participation in school occupations for all children. These studies were conducted in the classroom and so targeted the whole-class rather than whole-school level of service provision (note that the whole-class approach also involved subgroups to accommodate effective group work). Five studies aimed to promote

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handwriting and prevent literacy difficulties, with 4 of them targeting handwriting (Case-Smith et al., 2011, 2012, 2014; Jordan et al., 2016), and 1 targeting keyboarding (Chwirka et al., 2002). One study examined indirect interventions that addressed capacity building for teachers using occupational performance coaching (OPC; Graham & Rodger, 2010) to enhance classroom management of behavior (Hui et al., 2016). All 6 studies targeted children in the general school system, which included some at-risk students but excluded those with specific diagnoses.

The role of the occupational therapist differed across studies. For studies of the Write Start handwriting program, therapists and educators used a collaborative coteaching model to jointly deliver the program weekly (e.g., Case-Smith et al., 2014). In contrast, a keyboarding study used a self-directed online program for children that was organized by teachers daily for the students without occupational therapy input (Chwirka et al., 2002). The intensity of interventions ranged from once a week for 10 wk (Jordan et al., 2016) to twice a week for 12 wk (Case-Smith et al., 2011, 2012, 2014), and the OPC sessions involved eight coaching sessions over 11 wk (Hui et al., 2016; see Table A.2).

Collaborative coaching and capacity building was evident, for example, in studies in which training for educators was delivered beforehand (e.g., Hui et al., 2016) or in the Write Start studies, in which interventions included knowledge exchange and problem solving between educator and therapist (e.g., Case-Smith et al., 2012). Both programs included accommodations for individual students to support learning that were based on collaborative analysis of student performance between sessions. All studies involved educator delivery or codelivery; thus, they were connected to educational content, for example, in literacy or writing readiness programs. Outcomes relating to educators' capacity building were evident: In the OPC study, significant improvements were identified in educators' self-perceptions of performance at the 7-wk follow-up (Hui et al., 2016; see Supplemental Appendix Table A.3).

Tier 2 Interventions

Nine studies reported on Tier 2 interventions targeting children at risk of educational exclusion, including 2 studies of children from economically disadvantaged communities (Peterson & Nelson, 2003; Ratzon et al., 2007) and 1 of children from Indigenous communities (McGarrigle & Nelson, 2006). Of these, the occupational focus was on handwriting ($n = 7$), behavior ($n = 1$), or general school skills ($n = 1$; Table A.3). Of the 9 studies, 8 involved the therapist directly delivering the intervention by withdrawing students from the classroom (i.e., pull-out; Howe et al., 2013; Marr & Dimeo, 2006; McGarrigle & Nelson, 2006; Oliver, 1990; Peterson & Nelson, 2003; Ratzon et al., 2007; Sudsawad et al., 2002; Zwicker & Hadwin, 2009); these studies used a functional group approach with standard session plans ($n = 6$) or individualized interventions ($n = 2$). One pull-out study consisted of additional in-class supplementary programs delivered indirectly by educators (Oliver, 1990). Classroom-based indirect interventions were evident in 1 study targeting behavior and self-regulation in which Disc 'O' Sit cushions were provided to children by educators (Pfeiffer et al., 2008). The intensity of Tier 2 interventions ranged from one session a day for 6 days (Sudsawad et al., 2002) to twice a week for 12 wk (Howe et al., 2013).

Occupational therapists designed Tier 2 interventions by tailoring knowledge on the basis of multisensory and education or training approaches to session design (e.g., Howe et al., 2013; Oliver, 1990). School participation or educationally related intervention content was evident in 2 of the 9 studies: there was evidence of grade-level curriculum-informed content in 1 study (Howe et al., 2013), and in the other the school skills intervention was designed and constructed on the basis of Indigenous knowledge of learning needs and culturally relevant learning materials (McGarrigle & Nelson, 2006). These 9 studies did not report outcomes relating to educators' capacity building.

Tier 3 Interventions

Seven studies reported on Tier 3 interventions for children with specific diagnoses, including learning disabilities, autism, attention deficit hyperactivity disorder, emotional–behavioral disorders, or developmental delays or those receiving special education. The focus of interventions included behavior (Barnes et al., 2008; Mills et al., 2016; Schilling et al., 2003), handwriting or keyboarding (Case-Smith, 2002; Handley-More et al., 2003), social interaction (Sams et al., 2006), and collaborative consultation for participation (Kemmis & Dunn, 1996; see Table A.2). The therapists' role was to design and implement Tier 3 interventions directly ($n = 4$; Barnes et al., 2008; Case-Smith, 2002; Handley-More et al., 2003; Sams et al., 2006) or indirectly ($n = 3$; Kemmis & Dunn, 1996; Mills et al., 2016; Schilling et al., 2003), primarily targeting remedial interventions to establish or restore handwriting legibility, keyboarding skills, or self-regulation, with evidence of compensatory or accommodation approaches as well (e.g., Case-Smith, 2002; Schilling et al., 2003). It was unclear how these programs differed from similar programs identified for the at-risk or general school population, described for Tiers 1 and 2. The intensity of Tier 3 interventions ranged from one session a day for 12 days (Schilling et al., 2003) to 21 wk in one school year (Kemmis & Dunn, 1996).

Collaborative consultation and capacity building were evident, for example, in the Alert program (Barnes et al., 2008) and Sensory Activity Schedules (SAS) study (Mills et al., 2016), in which educators were provided with training in sensory processing before the intervention or in which occupational therapists continued to provide weekly collaborative consultation to educators (Kemmis & Dunn, 1996).

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Overall, positive outcomes were reported for collaborative consultation interventions (see Table A.2). Interprofessional collaboration and engagement with parents were less well established in these studies reported.

Evidence for Multitiered Interventions and Implementation

Eighteen studies were identified that described elements associated with establishing and implementing multitiered models of SBOT: Four studies related to staff education, 7 related to implementation of multitiered models, and 7 concerned therapists' experiences of implementation.

Four studies reported on educational programs for establishing collaborative SBOT. One study reported on the implementation of a program for educators to increase their awareness of occupational therapists' role (Christner, 2015), which proved effective in enhancing educators' readiness to engage in collaborative consultation and accept therapists in the classroom. Three studies reported on programs for professional development for therapists to deliver SBOT. Key approaches included peer mentoring (Bucey & Provident, 2018), the development of a formal educational online program combined with mentoring for capacity building (Pollock et al., 2017), and developing communities of practice (Roberts, 2015). Each of these four studies established new educational programs on the basis of evidence of need, and all reported enhanced capacity to deliver collaborative SBOT as an outcome.

Seven studies reported on the introduction and implementation of new multitiered models in Canada (Missiuna et al., 2017; Wehrmann et al., 2006; Wilson & Harris, 2018), Australia (Mills & Chapparo, 2018; Rens & Joosten, 2014), Pakistan (Kramer-Roy et al., 2020), and the United Kingdom (Hutton, 2009). Among these were 3 longitudinal studies that documented outcomes of SBOT multitiered service delivery models (Hutton, 2009; Kramer-Roy et al., 2020; Missiuna et al., 2017; see Table A.3). The outcome of implementing P4C in Canada was examined over 2 yr (Missiuna et al., 2017). This study found that P4C (1) eliminated existing waitlists in 40 schools; (2) enabled earlier identification of, and timely intervention for, children who were struggling in school; and (3) offered supports to children who would otherwise be deemed ineligible for service (e.g., children without a diagnosis). In reporting on a 3-yr project in Pakistan, Kramer-Roy et al. (2020) identified that support from school management and interprofessional collaboration was fundamental to implementing change and for making schools more inclusive. Moreover, in Hutton's (2009) 1-yr U.K. study in an area of social deprivation, researchers identified that adopting a whole-school inclusive approach was key. This approach included developing closer working relationships with educators onsite while incorporating the school environment when developing interventions. As with P4C, findings included therapists' increased capacity to enhance engagement and participation of all children and increased access to therapy for children who would otherwise be excluded from traditional therapy services (Hutton, 2009).

The remaining 4 of the 7 implementation studies focused on stakeholders' experiences: educators (Mills & Chapparo, 2018; Wilson & Harris, 2018), educators and occupational therapists (Rens & Joosten, 2014), and educators and children's parents (Wehrmann et al., 2006). These studies represented different types of multitiered interventions in Canada and Australia, including P4C and SAS. Overall, irrespective of which type of multitiered model was implemented, findings indicated that they had the best impact when therapy services included timely collaborative consultation and involved capacity-building approaches (Mills & Chapparo, 2018; Rens & Joosten, 2014; Wehrmann et al., 2006; Wilson & Harris, 2018). For example, educators reported that they learned new strategies from the therapist and found ways to embed these strategies within the classroom, which facilitated their daily support of children with identified needs (Mills & Chapparo, 2018; Wilson & Harris, 2018). Similar factors that maximized impact were highlighted across these studies: Occupational therapists needed to spend more time in school explaining their role, involving educators and parents, forming equal partnerships with educators based on a recognition of mutual expertise, and communicating in understandable language relevant to the school context.

Finally, 7 studies described therapy experiences when working with collaborative practice and tiered interventions. For example, findings from a study of U.S. therapists in SBOT (Case-Smith & Cable, 1996) identified that in-class and consultative practice were most dominant (53%), which was also identified in a more recent U.S. study exploring therapy practice to address social participation (Leigers et al., 2016). Two tiered models were involved: P4C (Campbell et al., 2012; Kennedy et al., 2020; Missiuna et al., 2012) and RtI (Cahill et al., 2014; Grandisson et al., 2020). In these studies, RtI as a national-level multitiered model identified emerging and varied therapy practices and experiences depending on the context. One study reported on collaboratively establishing practices to implement RtI for children with autism spectrum disorder in one school district (Grandisson et al., 2020), whereas in their national survey in the United States, Cahill et al. (2014) found that therapists often did not have the resources to take part and needed more guidelines. In contrast, in P4C, therapy provision was oriented in a consistent way around collaboration and coaching in context within the three-tiered model outlined by the WFOT (2016), with a focus on curriculum-based interventions (Campbell et al., 2012; Kennedy et al., 2020; Missiuna et al., 2012). Therapists reported uncertainty that changed into confidence as

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they adopted this new way of working (Campbell et al., 2012). However, the lack of family relationship work was identified as a challenge, and therapists identified the need to find innovative ways to address building family–therapist relationships (Kennedy et al., 2020). A key issue identified in both the RtI and P4C studies was the challenge in moving from a caseload referral model to a workload one (American Occupational Therapy Association et al., 2014).

Overall, across all 18 multitiered studies, the most common ingredients for success included embedding therapists in schools and classrooms on a regular and ongoing basis, which was typically every week, and interprofessional collaborative consultation to facilitate relationship building and mutual understanding of roles.

Discussion

This review of evidence in the occupational therapy literature for individual-tier and multitiered approaches to SBOT in elementary school settings identifies that this is an emerging area of practice. Across the 40 studies in this review, SBOT as represented by the P4C tiered model dominated over any other tiered model of therapy intervention ($n = 6$). As such, P4C provides the most developed tiered model for SBOT, with evidence-informed principles that suggest that interventions should be designed and delivered indirectly and aligned according to UDL (Tier 1), differentiated instruction (Tier 2), and accommodation (Tier 3; Missiuna et al., 2012).

Findings from multitiered interventions consistently identified the importance of collaboration, capacity building and modeling, consistent engagement of therapists in schools, and evidence-informed service design. For example, P4C therapists in Canada identified the criticality of establishing strong relationships with school communities, providing in-class services, and having the capacity to provide consistent responsive support by having dedicated time each week in the school (Campbell et al., 2012). Of the 18 multitiered implementation studies, the weekly presence of therapists in school settings and classrooms was typical. Notably, the processes of implementation and outcomes were reported to occur over long periods of time, ranging from one school term to 3 yr (Hutton, 2009; Kramer-Roy et al., 2020; Mills & Chapparo, 2018; Missiuna et al., 2012).

Of the 40 studies identified, 22 establish evidence for individual-tier SBOT interventions. These studies used a diversity of approaches irrespective of the characteristics of the child and with no clear differentiation among promotion, prevention, or remedial approaches. Therapists delivering direct interventions was most common ($n = 12$), and indirect collaborative consultation was least common ($n = 3$). Indeed, 16 of these 22 studies reported on occupational therapist–delivered (or codelivered) direct interventions for children. Pull-out approaches were so prevalent that the delivery of interventions in schools did not represent a clear differentiation between SBOT and traditional clinical-based practice.

Further analysis showed that intervention approaches did not clearly differentiate between SBOT and traditional clinical-based practice in many ways. For example, from the analysis of the intensity of interventions, the relative intensity across the different tiers was similar irrespective of which tier the child was at, with, for example, interventions at Tiers 1 and 2 consisting of 12-wk programs delivered twice a week (e.g., Case-Smith et al., 2011; Howe et al., 2013). Therefore, current evidence is for equally intensive SBOT interventions irrespective of the level they are targeting rather than providing increasingly intensive services across these three levels, which is a common goal of multitiered models (Ebbels et al., 2019).

Internationally, tiered interventions are characterized in terms of collaboration, coaching, and capacity building with school staff, and these approaches were most evident in individual Tier 1 studies. In 5 of the 6 studies, therapists cotaught with educators, focusing on capacity building in classroom settings using coaching alongside professional development education (e.g., Hui et al., 2016). However, unlike speech and language pathology, in which Tier 1 is characterized by training of others (Ebbels et al., 2019), a common feature of Tier 1 in the occupational therapy studies was on codelivery of the program with educators. The influence of UDL on SBOT service delivery is evident here through coaching in context, coteaching, instructional strategies, and collaborative consultation in the classroom setting to maximize participation in learning for diverse learners (Kennedy et al., 2020). Moreover, it is evidence of inclusion rather than integration because the processes and routines were embedded in the classroom setting to maximize participation.

Collaboration, coaching, and capacity-building delivery approaches were less evident in individual Tier 2 interventions because the focus of intervention was primarily delivery directly to the child via group interventions in settings outside of the classroom ($n = 7$). There was also evidence of educators implementing adaptations in the classroom (Pfeiffer et al., 2008), following instruction by therapists. Similarly, individual Tier 3 interventions consisted of a mix of in-class or pull-out interventions, with evidence of in-class programs to support self-regulation and sensory activities embedded in the classroom with collaborative consultation and knowledge translation (Kemmis & Dunn, 1996; Mills et al., 2016). However, because of the emphasis on delivering interventions outside the classroom, the interventions may not directly support learning and inclusion in the classroom, which is how educationally relevant interventions are defined (Lawerdure & Rose, 2012).

Research included in this review identified that the strongest evidence for individual-tier SBOT interventions is primarily for handwriting ($n = 14$) and behavioral or self-regulation interventions ($n = 6$).

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Educationally relevant objectives were not central in most studies, and most interventions did not address the inclusion of children in the school environment (e.g., curriculum or school culture). Moreover, no studies described a whole-school approach, despite evidence elsewhere for whole-school interventions (that included kindergarteners) relating to participation in the cafeteria or on the playground (e.g., Bazyk et al., 2018; Bundy et al., 2008).

This review of individual-tier studies indicated that there is a clear need to prioritize research to strengthen the evidence at each tier and inform the development of evidence-based, educationally relevant, contextual, multitiered models specific to SBOT practice. For example, there is a lack of evidence to date of reciprocal knowledge translation and capacity building at an individual-tier level, which is identified as a central characteristic of effective and successful collaboration in tiered models (VanderKaay et al., 2021). There is also to date little evidence for the use of UDL, differentiation, and accommodations in individual-tier SBOT interventions. Therefore, there is clearly more evidence currently available on therapist-delivered interventions for children than on coaching and modeling interventions with school staff, which are characteristic of effective multitiered models and have been key to the success of P4C (Lynch et al., 2020; Missiuna et al., 2012; WFOT, 2016).

Multitiered service implementation is complex and involves adjustment of processes at the macro and micro levels, requiring political, structural, attitudinal, and cultural change (Anaby et al., 2019; de Oliveira Borba et al., 2020; Lynch et al., 2020). To truly learn from and build on this emerging knowledge in the globalized world, it is essential to report on the complexities of developing and implementing tiered SBOT models situated in the health and education contexts in which they are developed. However, clarity and consistency of approach will be required to build mutual understanding of the WFOT (2016) vision of SBOT among the community of scholars.

Limitations

Although this scoping review was conducted systematically, it has some acknowledged limitations. First, the selection of peer-reviewed studies published in occupational therapy journals means that other sources of evidence may have been excluded, including systematic reviews. Second, assigning interventions to specific tiers may not have accurately reflected their intent. Third, this scoping review was limited to studies published in the English language; therefore, literature in other languages may have been overlooked.

Future Research Directions

In this review, we identified no studies that compared or contrasted evidence between tiers in SBOT (e.g., no studies compared a Tier 1 and a Tier 2 intervention). Moreover, although the studies reviewed represented interventions that targeted tiers relating to promotion, prevention, or remediation, it was not possible to identify what characterized a promotional intervention versus a preventive one. More studies are required to determine the characteristics of individual tiered interventions in a wholistic multitiered model of service delivery and, in relation to supporting participation and inclusion in schools, to develop needs-led, high-quality, cost-effective, and efficient services (Anaby et al., 2019).

Implications for Occupational Therapy Practice

The findings of this scoping review have the following implications for occupational therapy practice:

- Practitioners should seek to work collaboratively with educators, other allied health practitioners, and parents and guardians to capitalize on the unique expertise of all parties involved to support children's participation and inclusion in school.
- In shifting focus from individual deficits to contextual issues, practitioners should consider implementing educationally relevant tiered interventions to target inclusion in school.

Conclusion

The purpose of this scoping review was to stimulate debate regarding tiered models of delivery specific to SBOT and to illuminate gaps in knowledge in this emerging field. This review provides a broad understanding of SBOT tiered approaches in many contexts around the world and builds on emerging evidence for multitiered service delivery for SBOT internationally. Evidence shows there is as yet a lack of clarity about the characteristics of and differentiation between tiers and the precise aims of therapy when the goal is to promote, prevent, or address specific occupational concerns. Overall, evidence suggests that tiers are best delineated along the lines of child characteristics (i.e., all children, those at risk, and those with identified diagnoses) rather than based on whether the intervention is prevention, promotion or remedial, or intensive, because all three tiers were delivered at similar levels of intensity. To date, SBOT evidence to inform tiered interventions is oriented mostly toward delivering therapy directly to the child rather than incorporating more inclusive practices that address capacity building and coaching of the school staff. While increasing children's skills has traditionally been the objective of pediatric SBOT intervention, a shift toward multitiered service delivery to enhance school occupations is essential to truly champion inclusion.

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