

Review Article

Evidence-based preventive care guidelines in pediatric primary care

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Received: 07 January 2025

Accepted: 22 January 2025

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ABSTRACT

Evidence-based preventive care guidelines offer a systematic approach to early detection, prompt intervention, and the promotion of health, encompassing various aspects of physical, mental, and developmental well-being. Recently, more focus has been placed on improving guidelines for preventive interventions for pediatric populations. Primary care is considered a great venue for implementing these preventive interventions. In addition, primary care is the preferable place for parents to do such preventive interventions. Multiple authorized organizations have developed new guidelines and recommendations in order to improve the delivery of preventive measures in pediatric primary care in recent years. Unlike adults' guidelines, pediatric preventive guidelines are confusing and of low quality, leading to more challenges faced by primary care providers. This review aimed to evaluate the quality of recent studies on this topic, with a focus on the accuracy and efficacy of current evidence-based guidelines. Despite advancements, challenges such as childhood obesity, speech disorders, and depression require further refinement of evidence-based guidelines, supported by high-quality research. Additionally, the integration of technology has demonstrated potential for enhancing the delivery and outcomes of pediatric primary care.

Keywords: Preventive care, Primary care, Pediatric, Pediatric care, Evidence-based guidelines, Obesity, Depression

INTRODUCTION

Evidence-based preventive care guidelines provide a structured framework for early detection, timely intervention, and health promotion, addressing a wide

range of physical, mental, and developmental health needs. The development of evidence-based screening and preventive guidelines in pediatric primary care has become an urgent necessity due to the change in the nature of pediatric morbidities in recent years. Children

and their families should be provided with the highest quality recommendations; this can be achieved by basing the guidelines on robust evidence produced by systematic reviews and rigorous clinical trials. Clinical guidelines have long been a key element of pediatric practice. However, recently there has been a shift to improve these guidelines by standardizing the guideline process to enhance the reliability, effectiveness, and quality of care delivered to children.¹ Preventive care guidelines are usually provided by primary care providers. Primary care offers an excellent setting for implementing evidence-based clinical preventive interventions, such as behavioral counseling interventions, screening, and immunizations.

These preventive services can facilitate the identification, treatment, and prevention of childhood diseases. Generally, parents prefer to receive preventive interventions in primary care, as they have a greater ability to engage with these services there, unlike other healthcare settings. However, primary care remains not fully utilized for such services for providing preventive services.^{2,3} Although pediatric health providers have long been provided prevention care guidelines for different pediatric preventive health issues by various organizations such as the American academy of pediatrics and the US preventive services task force (USPSTF), providers encounter difficulties using these guidelines. This is largely due to different methodologies in developing these guidelines, which result in inconsistent or conflicting recommendations. As a result, clinicians are left to make decisions under uncertain conditions.¹

On the other hand, adult preventive services have a more robust body of evidence, which provides clinicians with more strong evidence-based interventions. The scarcity of high-quality evidence for children is multifactorial and includes limited research funding for child health, especially in preventive services and primary care, together with insufficient numbers of pediatric researchers.

This review aimed to discuss the recently published evidence-based guidelines of preventive care in pediatric primary care settings, especially obesity, speech disorders, and depression prevention guidelines, and to assess the delivery and efficacy of these evidence-based guidelines. In addition, recent gaps and future directions are going to be discussed.

LITERATURE SEARCH

The following databases were used in systematic research: Medline (PubMed), Web of science, and Scopus till January 12, 2025. MeSH database was used to retrieve the synonyms of search strategy. Search terms were then combined by ("AND" and "OR") Boolean operators according to the Cochrane handbook for systematic reviews of interventions as follows: "preventive medicine" OR "preventative medicine" OR "preventive care" OR "preventive health" AND "primary care" OR

"primary healthcare" AND "pediatrics" OR "Pediatric" OR "pediatric health".⁴ Summaries of the found studies were exported by EndNoteX8, and duplicate studies were removed. Any study that discusses evidence-based preventive care guidelines in pediatric primary care and published in peer-reviewed journals was included with the inclusion of full-text articles, abstracts, and case series with the related topics are included. All languages are included. Animal studies, case reports, letters and comments were excluded.

DISCUSSION

Obesity

Body weight can be measured by body mass index (BMI), which is a measure of weight related to height. A BMI of 85th to <95th percentile represents overweight, while a BMI \geq 95th percentile represents obesity. Obesity is associated with cardiovascular risk factors.⁵ An elevated BMI is related to children's risk for obesity, morbidity, and mortality in adulthood.^{6,7} Thus, early detection and prevention of obesity in primary care is essential to reduce the risks of these outcomes in pediatric populations.

Prevention counseling is critical during infancy; it was found that dietary habits during the first 1000 days of a child's life have a remarkable effect on the risk of later obesity.⁸ In addition, exclusive breastfeeding for the first six months of age and continuing breastfeeding up to twelve months of age should be encouraged. Notably, postponing the introduction of solid foods until 4-6 months of age is associated with reduced adiposity later in childhood.⁹ In infancy, guidelines recommend weight and length measurement at each well visit,¹⁰ while annual measurement of growth and calculation of BMI to screen for obesity is recommended in children older than 2 years.¹¹ Toddlers tend to eat foods that they see their siblings and parents eat. Therefore, parents should focus on creating mealtime routines by this age, these routines should include three meals a day, not eating with the television, eating together as a family, and eating at the table. Parenting interventions have demonstrated a good impact at preventing and treating obesity.^{12,13}

"Prevention plus" is the first intervention for children with overweight or obesity. It encourages more healthy lifestyle activities to reduce the child's BMI gradually. The chronic care model ensures the importance of the role of both the medical system and the surrounding environment to improve this intervention.¹⁴ Providing easily accessible healthy alternatives (keeping a fruit bowl on the counter), using plates and glasses of smaller sizes, and stopping eating while engaged in screen time and directly from the package are examples of the environmental modifications. Providers at primary care should encourage parents to return to follow-ups, frequency of visits could be determined by motivational interviewing. If there is no improvement after 3-6

months, structured weight management should be offered.¹⁵ Prevention plus is followed by more structured obesity treatment in the goal setting and further assistance outside the primary care.

Regularly, providers refer to expert dietitians in training pediatrics. They also refer to counselors who have experience in parenting skills. To improve the child's physical activities, a physical therapist can be helpful.¹⁵ Additionally, structured weight management is typically used. It includes monthly office visits and may include group sessions. Self-monitoring by children and their families is also motivated by providers, however its benefits are debatable.^{16,17} Therefore, researchers do not recommend self-monitoring as part of structured weight management. The child should be evaluated after 3-6 months of structured weight management. If the child is showing progress such as decreasing BMI or maintaining weight, then structured weight management should be continued. If the opposite occurs, primary care providers should refer to comprehensive multidisciplinary intervention.¹⁸

Speech disorders

According to experts, speech and language development reflect a child's cognitive ability and overall

development.¹⁹ It is also associated with school success.^{20,21} Studies reported 5% to 8% prevalence of combined speech and language delay in 2 to 4.5 years old preschool children, while language delay only showed a prevalence from 2.3% to 19%.^{22,23} Studies reported that preschool children showed untreated speech with persistence rates of 40% to 60%.²³ A "delay" is speech and language development that progresses at a slower than expected rate but follows the correct sequence, while a "disorder" is a qualitative deviation from this correct sequence.²⁴ Multiple observational studies reported that children in school age with speech or language delay are at elevated risk of social and behavioral problems and learning and literacy disabilities, which could persist through adulthood.^{23,25-27} Therefore, early screening for speech or language problems at pediatric primary care settings is critical for preventing subsequent complicated disorders.

From overall developmental screening, screening for speech delay is especially recommended by the American academy of pediatrics at 18 and 30 months.²⁸ A recent review by Feltner et al aimed to assist the USPSTF in updating their recommendations through assessing the benefits and harms of speech and language delay and disorders screening in children.^{22,24} The key questions that guided the review are shown in Figure 1.

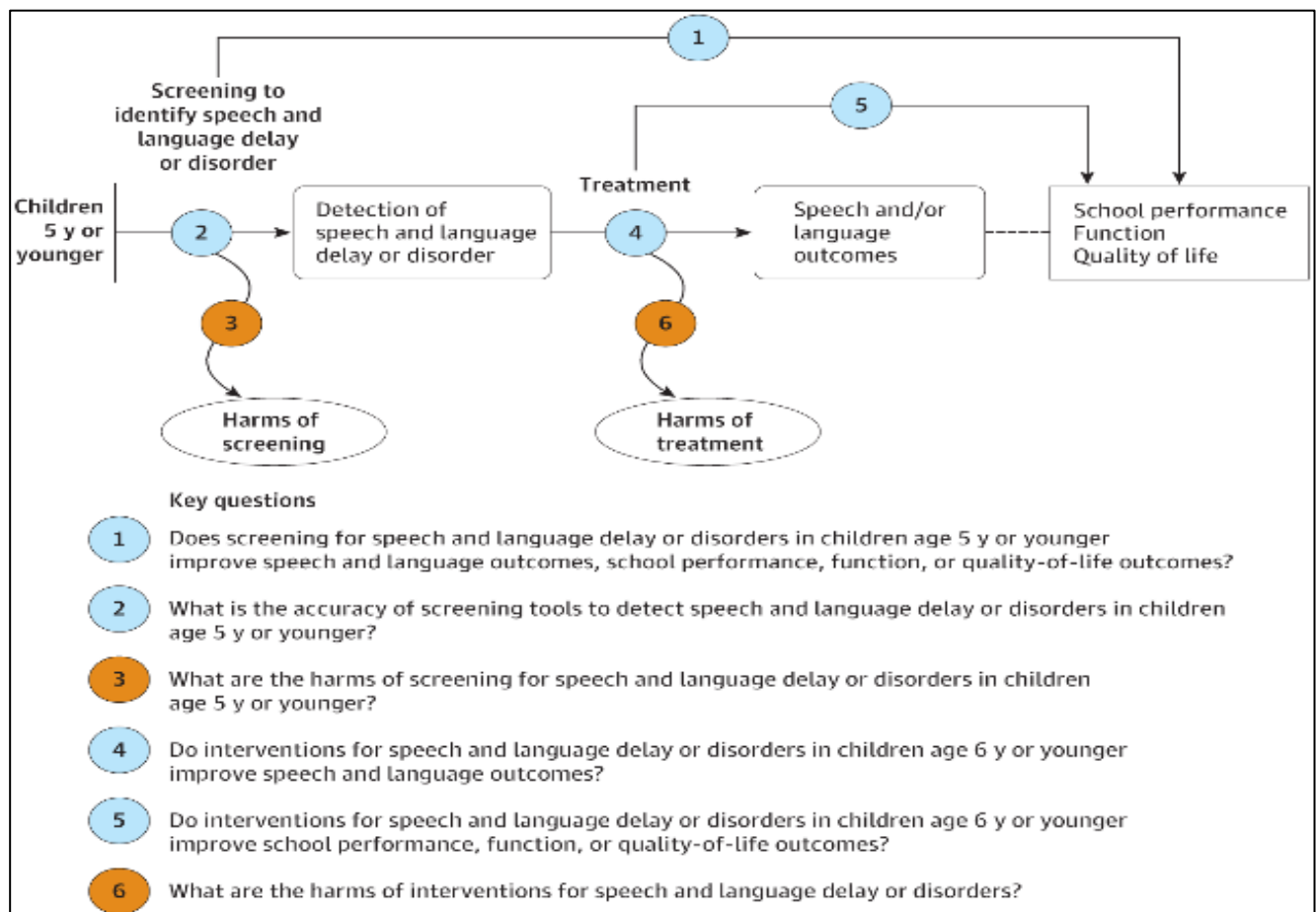


Figure 1: Analytic framework and key questions.²⁴

The accuracy of 23 screening instruments which detect speech and language delay and disorders in children was examined. Some instruments are designed to be used by a trained examiner, while others are parent reports of children's language or speech skills.²⁹⁻³² They are also classified into global screening tools, which detect any language disorder, and others examine specific language aspects. Global screening tools, such as the general language screen, the ages and stages questionnaire, and the early language scale, are widely used to assess overall developmental milestones.^{31,33,34} In contrast, tools targeting specific language aspects include the language development survey, the early screening profiles, and the Brigance preschool screen.^{31,32}

The first key question examined the benefits of screening, and no direct evidence was found regarding the benefits or harms of routine screening in primary care. The second key question focused on the accuracy of screening instruments. Overall, the specificity of the instruments ranged from 32% to 98%, while sensitivity ranged from 17% to 100%. To provide more specific results, parent-reported instruments and those used by trained examiners were analyzed separately. Fourteen parent-reported instruments demonstrated wide variability, with specificity ranging from 32% to 96% and sensitivity ranging from 55% to 93%. Similarly, the accuracy of 13 screening tools administered by trained examiners was assessed, showing sensitivity ranges from 17% to 100% (median: 87%) and specificity ranges from 58% to 98% (median: 88%). Notably, instruments used by trained examiners also exhibited significant variability in accuracy.

The third and the sixth questions focused on the harms of screening and treatment and found no eligible studies assessed those questions. However, possible harms may include unnecessary referrals, false positives, parental anxiety, and stigma. The last two questions discussed the benefits of treatment. Randomized clinical trials showed that parent training programs might be useful for expressive language delays.³⁵ Other trials demonstrated that the Lidcombe program improves stuttering fluency. The Lidcombe program is an intervention guided by a speech-language pathologist, who trains the parents by encouraging them to praise shutter-free speech and gently highlighting stuttering for the child. Additionally, it includes training the parents to encourage the child to evaluate or correct their speech.³⁶ Evidence for other interventions remains inconsistent or limited. Most participants were recruited from specialized settings, few were recruited through routine primary care screening, which necessitates more trials focusing on primary care populations. Longer-duration programs for children aged 27-30 months showed consistent benefits for expressive language outcomes, while shorter programs for younger children showed no significant improvements. Inconsistent results for early literacy, school performance, quality of life, and function, with limited follow-up durations to detect long-term benefits, were also reported.

Depression

The 2014 Ontario child health study demonstrated a 6-month prevalence of possible major depressive episodes (MDE) as 5.2% or 7.5% for adolescents aged 12 to 17, based on parent and adolescent reports, respectively, and 1.1% for children aged 4 to 11.³⁷ The Canadian community health survey data (2000-2014) showed that 5.5% of 12 to 19-year-olds experienced MDE-like episodes in the past year, with minimal changes in prevalence over time.³⁸ Females had higher rates than males, and adolescents aged 15 to 19 had higher rates compared to younger ones aged 12 to 14.³⁸ Increased outbursts and frequent fighting or arguments, school performance or attendance problems, substance abuse, unexplained somatic symptoms, suicidal behaviors or thoughts, and withdrawal from friends and family are the main presentations of depressed children.³⁹

Depression burden is high among children and adolescents. Years lost to disability can be a result of persistent depressive disorders among both 10-14-year-old and 15-19-year-old age groups.⁴⁰ Depression is also associated with poor social long-term consequences in adolescence, such as a lower probability of entering post-secondary education and increased risk of early leaving secondary school and unemployment.⁴¹ Pediatric depression causes a burden on individuals, families, and communities, as it may persist till adulthood.⁴¹ A recent systematic review demonstrated that adolescents with depression have higher odds of developing depression in adulthood compared with those without depression.⁴² Therefore, it is necessary to early prevent and screen depression among pediatric populations. Primary care providers play a crucial role in screening and identifying depression in pediatric patients. Additionally, primary care providers may recognize depression at early stages by following up regularly on presenting problems in primary care, such as repeated physical complaints.³⁹

In recent years, multiple guidelines on pediatric depression screening and management in primary care were recommended by various established organizations. The 2018 guidelines for adolescent depression in primary care (GLAD-PC) recommend that children aged 12+ should be screened for depression during wellness visits. It also recommends tailored strategies for mild, moderate, and severe cases. Additionally, it highlights the importance of suicidality assessment, safety planning, and practice preparation. Other recommendations are using standardized tools and evidence-based treatments such as cognitive interpersonal therapy, selective serotonin reuptake inhibitors, or behavioral therapy.⁴³

The 2016 US preventive services task force also recommends screening for adolescents aged 12+ in primary care if resources for diagnosis, treatment, and follow-up are available. No sufficient evidence was found by USPSTF to recommend screening for younger

children. It also found no direct evidence of screening effect on patient outcomes.⁴⁴

The 2015 national institute for health and care excellence (NICE) is concerned with training primary care, community, and school providers to evaluate comorbidities and risk factors. It stated that antidepressants shouldn't be prescribed for mild cases and that psychological treatments can be useful. On the other hand, moderate and severe depression treatment should combine pharmacological and psychological therapy.⁴⁵ However, a recent review found no evidence on the benefits or harms of depression screening in pediatric populations. This finding highlights the need for further research in this field.⁴⁶

Gaps and future directions

To date, preventive care in pediatric primary care settings faces multiple challenges, such as missed opportunities for preventive care in primary care settings, using technology to improve pediatric care for at-risk children, and the lack of evidence-based preventive care recommendations for children and adolescents. Challenges and methods of developing evidence-based guidelines and recommendations for preventive care in pediatric primary care were examined by a recent study. The study found insufficient high-quality studies focusing on pediatric primary care; it also couldn't find enough evidence to issue robust recommendations for pediatric preventive interventions. Additionally, due to different methodologies performed by various organizations, conflicting guidelines are being issued, leading to more challenges faced by primary care clinicians in practicing evidence-based medicine. These challenges include lack of resources, training, and supportive environments.¹

In order to overcome these gaps, the study recommended that organizations should align the development processes of guidelines to confirm they are consistent and cohesive. It also recommended interactive and practical training programs to improve providers' abilities in applying evidence-based practices, and to include decision support tools to make it easier for providers to adhere to guidelines. It is also crucial to consider outcomes like functional status and quality of life in guideline models.¹ For a better pediatric care future, more high-quality research in preventive primary care should be done. Additionally, the integration of technology and systems-based practices to improve preventive services and the implementation of innovative care models should be started. A recent study emphasized the potential role of connected technologies in closing gaps in primary pediatric care.¹

CONCLUSION

This review emphasizes the need for evidence-based guidelines and fair access to pediatric preventive care in primary care settings. Barriers such as research gaps,

access inequalities, and irregular practices should be resisted for effective early screening and prevention, especially for conditions like depression, obesity and language delays. Providers, families, and communities' efforts should be coordinated to improve health outcomes for all children.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Alzanbagi SM, Ismael MZ, Alshehri HS, Almalki OM, Julaidan BM, Miralam RT, et al. Evidence-based preventive care guidelines in pediatric primary care. *Int J Community Med Public Health* 2025;12:1110-6.