Needle Fear in Children

Sydney Garcia

Texas Woman's University

HDFS 5403.50 Child Life

Dr. Kathryn Cantrell

Needle Fear in Children

Throughout their early years, children encounter numerous preventative and treatment procedures that require exposure to needles. These experiences can be distressing for children, leading to needle-related fear and anxiety. Although, needle fear is most commonly thought to be associated with younger children, research has shown that this issue is prevalent among a broad range of ages (McLenon & Rogers, 2019). Due to the widespread nature of needle fear and a lack of recent research limited to one specific developmental stage, I will focus on needle fear in children from Piaget's sensorimotor stage through his formal operational stage in this literature review. Additionally, I will define needle fear in pediatric patients aged 0-18, examine its developmental and psychosocial impact on children and their families, and outline interventions that have previously been used to alleviate this issue. Finally, in the conclusion, I will provide recommendations for child life specialists to assist in minimizing the potential stress of children experiencing needle-related fear.

Definition

Researchers define needle fear as anxiety experienced by patients from procedures involving the insertion of needles or injections (Love & Love, 2021, p.2). The term needle fear encompasses a broad range of distress from slight anxiety to a diagnosis of needle phobia, which is defined as "anxiety that is out of proportion to the threat" of needles (Alsbrooks & Hoerauf, 2022; Love & Love, 2021). For those with minimal needle fear, symptoms can include anticipatory anxiety, behavioral problems, and physical symptoms (Navarro et al, 2021). However, needle phobia is considered a more extreme psychiatric disorder which can involve symptoms including palpitations, sweating, dizziness, lightheadedness, and even fainting (Galler

et al., 2021). The issue of needle fear is significant due its prevalence and potential negative effects on children's physical and psychosocial well-being.

According to a 2019 systemic review and meta-analysis on the prevalence of needle fear, findings suggest that the "majority of children exhibited needle fear, while prevalence estimates for needle fear ranged from 20-50% in adolescents" (McLenon & Rogers, 2019, p.30). Because needles are routinely used in various medical procedures for the delivery of medication and surgery, it is important to address this issue to alleviate fear and prevent long-lasting consequences (Alsbrooks & Hoerauf, 2022). Left untreated, needle fear could potentially result in avoidance and noncompliance resulting in poor health outcomes.

Despite needle fear being a widespread problem, recent research on this topic is limited. Therefore, narrowing the population to a single developmental stage did not yield a large base of current scholarly research. Thus, for this literature review, I decided to focus on needle fear in children aged 0-18. This includes infants (0-1 years), toddlers (1-3 years), preschoolers (3-6 years), school-aged children (6-12 years), and adolescents (12-18 years) (Pearson, 2018). I believe this range is appropriate because needle fear is not limited or specific to a particular age group.

Developmental and Psychosocial Impact

The impact of needle fear is far reaching with the negative consequences of unaddressed anxiety lasting a lifetime for some patients. It is important to note that many pediatric patients express feelings of pain during injections which can lead to needle fear and an increased perception of pain in future procedures (Tomás-Jiménez et al., 2021). This can cause the undesired effect of negative attitudes towards health care providers and medical procedures

involving needles. In the short term, needle fear causes unpleasant vaccine experiences and heightened stress and anxiety for both children and caregivers (Taddio et al., 2022). If appropriate coping skills are not introduced by child life specialists, children are at risk for the use of poor emotional regulation strategies, avoidance, and suppression (Galler et al., 2021).

Additionally, needle fear can affect long term well-being through the potential development of needle phobia and non-compliance to needed medical procedures (Taddio et al., 2022). One study found that negative childhood immunization experiences in children aged 4-6 could be associated with fear and noncompliance that extends into adulthood (Love & Love, 2021). In conjunction with these findings, a 2022 survey of adults with needle fear showed that previous traumatic experiences with needles was a significant factor among many participants that led to their fear of needles (Alsbrooks & Hoerauf, 2022). This highlights the importance of focusing on this psychosocial concern in a timely manner to prevent long-lasting impacts.

Even in the short term, needle fear can potentially lead to negative health outcomes stemming from avoidance of medical treatment. A 2022 systemic review and meta-analysis on the influence of needle fear and perceptions of pain in children aged 0-18 years of age, found a much larger prevalence of needle fear in the under-vaccinated population compared to the general population (Taddio et al., 2022). This helped support the conclusion that needle fear is a barrier to vaccination (Taddio et al., 2022). This is significant because vaccines are used to prevent severe illness that could impair physical functioning.

While needle fear has had an impact on preventative care in children, research has also shown its effect on avoidance for treatment in children with chronic conditions. A 2021 study on the impact of anxiety disorders on health outcomes for youth with type 1 diabetes noted worse

glycemic control in individuals with needle phobia than those without an anxiety disorder (Galler et al., 2021). The daily exposure to stress caused by needle fear can be taxing for children with chronic illnesses and their caregivers. The distress children experience due to needle fear is significant and has the capability to have negative effects on their developmental and psychosocial well-being, as well as their physical health.

Interventions for Needle Fear

Multiple interventions have been introduced to help prevent and alleviate the issue of needle fear and its impact on children. These have included the use of education, digital technologies, distraction, clinical holding, medical play, acknowledging communication, reassurance, and the Buzzy. In a 2020 qualitative explorative study on children aged 5 to 15 with a rhematic disease coupled with needle fear, adult reassurance proved to be an ineffective method at reducing children's needle related fears while age-appropriate education sessions, acknowledging communication, and medical play all reduced fears associated with needles (Sørensen et al, 2020). Additionally, developmentally appropriate education was highlighted as an effective intervention to reduce emotional distress associated with procedures involving needles by Navarro et al. (2021). Another useful technique in alleviating distress and pain perception in children with needle fear is clinical holding, an intervention that involves the "limited use of force in order to carry out a painful clinical procedure" (Tomás-Jiménez et al., 2021, p.2). In a 2021 study exploring the use of clinical holding, it was found that caregiver participation during venipuncture resulted in lower levels of distress (Tomás-Jiménez et al., 2021).

Several innovative interventions involving the use of virtual reality and advanced technology have also been studied. A 2021 study compared the effectiveness of distraction cards (DC), virtual reality (VR), and the Buzzy in relieving venipuncture pain and anxiety compared to a control group for children aged 7-12 (Erdogan & Ozdemir, 2021). Results showed that all methods were more effective than the control group in reducing children's fears related to venipuncture (Erdogan & Ozdemir, 2021). However, the Buzzy method, which involves the use of a bee-shaped device to apply cold and vibration at the injection site, was found to be the most effective intervention (Erdogan & Ozdemir, 2021). The expansion of technology has broadened the array of interventions for children with needle fear. A more recent study from 2023 tested the use of an exposure-based video game that allowed children to digitally administer shots to cartoon characters to reduce needle fear in children aged 3-6 (Healy et al., 2023). Seventy-four percent of parents from this study reported that the game improved their children's fear related to needles (Healy et al., 2023). Despite the numerous interventions that have been tested, there is so much more that can be done to explore theoretical and evidence-based solutions to the problem of childhood needle fear.

Recommendations

Certified Child Life Specialists can play an important role in addressing needle fear due to their use of evidence-based interventions to minimize potential stress and trauma. Both the intervention by Sørensen et al. (2020) and the Dr. Zoo exposure-based video game by Healy et al. (2023) showed promising results and demonstrated the importance of observational learning. Therefore, an increase in the use of medical play could potentially be a beneficial intervention for child life specialists to use when supporting children with needle fear. This recommendation

is also based on Bandura's social learning theory which stresses modelling as an avenue to behavior change (Bandura, 1977).

Another recommendation for child life specialists is to place emphasis on education by providing developmentally appropriate preparation that addresses what children can expect from upcoming needle related procedures and prepare them with coping strategies. This would be helpful in altering children and family's primary appraisal from the Lazarus and Folkman's stress and coping model. Additionally, the Children's Action Reaction Assessment Tool, also known as 'CARAT,' could be helpful for child life specialists to help assess symptom management of needle fear (Karlsson et al., 2021). This observation tool can be critical in discovering areas in which health care professionals can improve the implementation of evidence-based practices which involves using "current best evidence in making decisions about the care of individual patients" (Sackett et al., 2007, p.71). Both education and the CARAT tool are highly effective but underutilized.

It is important for child life specialists to exhaust all avenues of interventions to prevent the development of needle fear and to intervene if it already exists. It is evident that much more research is warranted in the area of needle fear interventions. Child life specialists could be instrumental in conducting research that breaks down interventions by developmental stages. This would be important because children in different developmental stages may require different approaches to alleviate needle fear. For instance, a child in Piaget's preoperational phase would likely benefit from a different intervention than a child in his formal operational stage.

Conclusion

In this literature review, I examined research on needle fear and the significant impact it can have on the mental, physical and emotional well-being of children aged 0-18. If not properly addressed, needle fear can lead to numerous negative effects including increased anxiety, needle phobia, avoidance of medical treatment, worsening of existing medical conditions, progression into adulthood, and even generational needle fear. Although numerous articles on the subject exist prior to 2019, current research on needle fear in children is limited. Child life specialists should use current interventions while working towards alleviating this issue by conducting research on children with needle fear with a special focus on specific developmental stages. Child life specialists have the opportunity to play a vital role in assisting children and their families in navigating medical procedures involving needles. This is crucial due to the significant role needles play in medical treatments and the fear it creates in many children aged 0-18.

References

Alsbrooks, K., & Hoerauf, K. (2022). Prevalence, causes, impacts, and management of needle phobia: An international survey of a general adult population. *PloS One, 17*(11), e0276814.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Erdogan, B., & Aytekin Ozdemir, A. (2021). The Effect of Three Different Methods on Venipuncture Pain and Anxiety in Children: Distraction Cards, Virtual Reality, and Buzzy® (Randomized Controlled Trial). *Journal of Pediatric Nursing, 58*, e54–e62.

Galler, A., Tittel, S. R., Baumeister, H., Reinauer, C., Brosig, B., Becker, M., ... & Holl, R. W. (2021). Worse glycemic control, higher rates of diabetic ketoacidosis, and more hospitalizations in children, adolescents, and young adults with type 1 diabetes and anxiety disorders. *Pediatric Diabetes, 22*(3), 519-528.

Healy, P., Lu, C., Silk, J. S., Lindhiem, O., Harper, R., Viswanathan, A., & Babichenko, D. (2023). An Exposure-Based Video Game (Dr. Zoo) to Reduce Needle Phobia in Children Aged 3 to 6 Years: Development and Mixed Methods Pilot Study. *JMIR Serious Games, 11,* e42025.

Karlsson, K., Johnson, E., & Nilsson, S. (2021). The Children's Action-Reaction Assessment Tool (CARAT) as an observational technique for assessing symptom management: An initial validation study with children aged 3–7 years undergoing needle procedures. *Journal for Specialists in Pediatric Nursing, 26*(4), e12334.

Love, A. S., & Love, R. J. (2021). Considering Needle Phobia among Adult Patients During Mass COVID-19 Vaccinations. *Journal of Primary Care & Community Health, 12*, 215013272110073. https://doi.org/10.1177/21501327211007393

McLenon, J., & Rogers, M. A. M. (2019). The fear of needles: A systematic review and meta analysis. *Journal of Advanced Nursing, 75*(1), 30–42.

Navarro, M. D., Illera, H., Ruíz, B., Naudó, M., Serrallonga, N., Tordera, S., ... & Jabalera, M. (2021). Needle phobia: How to improve the child's experience during blood drawing. *Patient Experience Journal, 8*(1), 116-125.

Pearson, L. J. (2018). Children's hospitalization and other health-are encounters. In J. A. Rollins, R. Bolig, & C. C. Mahan (Eds.), *Meeting children's psychosocial needs: Across the health-care continuum* (pp.1-39). Pro-ed.

Sackett, D. L., Rosenberg, W.C., Gray, J. M., Haynes, R. B., & Richardson, W.S. (2007). Evidence based medicine: What it is and what it isn't. *Clinical Orthopaedics and Related Research,* 4553-4555.

Sørensen, K., Skirbekk, H., Kvarstein, G., & Wøien, H. (2020). Children's fear of needle injections: a qualitative study of training sessions for children with rheumatic diseases before home administration. *Pediatric Rheumatology Online Journal, 18*(1), 13–12.

Sørensen, K., Skirbekk, H., Kvarstein, G. et al. I don't want to think about it: a qualitative study of children (6–18 years) with rheumatic diseases and parents' experiences with regular needle injections at home. *Pediatr Rheumatoly 19, 8* (2021). https://doi.org/10.1186/s12969-021-00495-4

Taddio, A., McMurtry, C. M., Logeman, C., Gudzak, V., de Boer, A., Constantin, K., … Pham, B. (2022). Prevalence of pain and fear as barriers to vaccination in children – Systematic review and meta-analysis. *Vaccine, 40*(52), 7526–7537.

Tomás-Jiménez, M., Díaz, E. F., Sánchez, M. J. F., Pliego, A. N., & Mir-Abellán, R. (2021). Clinical holding in pediatric venipuncture: caring by empowering the caregiver. *International Journal of Environmental Research and Public Health, 18*(14), 7403.