S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
1.	Brouwer et al. (2020)	Barriers in care for children with life-threatening conditions: A qualitative interview study in the Netherlands	Parents of children suffering/ died from a life- threatening condition	Qualitative study done In-depth interviews of parents	The Netherlands	<ul> <li>Policy level</li> <li>Barriers to bureaucratic system</li> <li>Lack of healthcare continuity</li> <li>Healthcare provider level</li> <li>Less participation of parents in decision-making</li> <li>No conversations about the prognosis</li> <li>Lack of empathetic communication</li> <li>Lack of support to parents regarding end-of-life decision-making</li> <li>Lack of attention to the family</li> <li>Provision of bereavement care</li> <li>Symptom management is emphasized by over-attention to the child as a person</li> </ul>	<ul> <li>Policy level</li> <li>Introducing case managers and provision of team approach and support</li> <li>Healthcare provider level</li> <li>Openness and clarity in communication</li> <li>Training of healthcare providers in effective communication skills</li> <li>Parents should be involved in decisions about the care of their child</li> <li>Supporting parents in making end-of-life decisions</li> <li>Cautious use of professional intimacy</li> </ul>	
2.	Rost <i>et al.</i> (2020)	Barriers to palliative care in paediatric oncology in Switzerland: A focus group study	Paediatric oncology providers	Qualitative focus group study	Switzerland	<ul> <li>Policy level</li> <li>Financial constraints</li> <li>Lack of pre-employment education</li> <li>Lack of awareness among policy-makers</li> <li>No bridging care system from hospital to home</li> <li>Organizational level</li> <li>Understaffing</li> <li>Inadequate infrastructure</li> <li>Asymmetry of knowledge</li> <li>Lack of supervision</li> <li>Healthcare provider level</li> <li>Incomplete communication</li> <li>Patient and family level</li> <li>Cultural aspects, irrational parental hopes</li> </ul>	<ul> <li>Policy level</li> <li>Raise awareness regarding palliative care for children among policy-makers</li> <li>Disentangling paediatric from adult palliative care</li> <li>Inclusion of paediatric palliative care in the postgraduate and pre-service training</li> <li>Establish effective bridging care</li> <li>Organizational level</li> <li>Implementing regular team meetings</li> <li>More flexible approach to staffing and recruitment</li> <li>Healthcare provider level</li> <li>Open team discussions</li> <li>Patient and family level</li> <li>Identified barriers are mostly unavoidable</li> </ul>	
3.	Ehrlich <i>et al.</i> (2020)	Barriers to the early integration of palliative care in pediatric oncology in 11 Eurasian countries	Physicians	ADAPT survey		<ul> <li>Policy level</li> <li>Limited access to palliative care specialists or services</li> <li>Cost of palliative care consultation and treatment</li> <li>Organizational level</li> <li>Home-based services are lacking</li> <li>Patient and family level</li> <li>Family is not willing to involve the palliative care team</li> <li>Healthcare provider level</li> <li>Lack of knowledge</li> <li>Physicians are not comfortable discussing palliative care with families</li> <li>Physician's desire to maintain hope</li> </ul>	Policy level	

TABLE I.	Characteristics and	l summary of the lite	rature related to palliative	care in children w	ith life-limiting illnesses

S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
						<ul><li>Uncertainty regarding patient prognosis</li><li>Lack of time</li></ul>		
4.	Cuviello et al. (2020)	Defining the boundaries of palliative care in paediatric oncology	Paediatric oncology service providers	Mixed-methods study	USA	<ul> <li>Healthcare provider level</li> <li>Providers are uncomfortable in providing palliative care</li> <li>Oncologists reluctant to involve palliative care teams</li> <li>Patient and family level</li> <li>Reluctance of families to involve palliative care team due to negative perception</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Training of oncology team in palliative care skills</li> <li>Palliative care integration</li> <li>Destigmatize palliative care</li> <li>Development of standardized tools for consultation</li> </ul>	
5.	Cuviello et al. (2020)	Initiating palliative care referrals in paediatric oncology	Paediatric oncology providers	Mixed-methods study	USA/Maryland	<ul> <li>Healthcare provider level</li> <li>Communication issues</li> <li>Providers are not aware of available resources for palliative care</li> <li>Some physicians are not clear about the benefits of palliative care consultation</li> <li>Improper documentation</li> <li>Organizational level</li> <li>Lack of standardization for palliative care consult</li> <li>Policy level</li> <li>Lack of resources</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Improving interdisciplinary communication</li> <li>Providing education and palliative care skill training</li> <li>Organizational level</li> <li>Screening tools may be developed for referral to palliative care</li> </ul>	
5.	Yu et al. (2020)	Perceptions of paediatric palliative care among physicians who care for paediatric patients in South Korea	Physicians	Survey approach	South Korea	<ul> <li>Organizational level</li> <li>Low confidence among physicians about key elements of paediatric palliative care</li> <li>Lack of workforce</li> <li>Lack of facilities specialized in paediatric palliative care</li> <li>Patient and family level</li> <li>Patients' or caregivers' negative perception of palliative care for children</li> </ul>	<ul> <li>Organizational level</li> <li>Early introduction of palliative care for children</li> <li>Development of education and training curriculum for healthcare personnel</li> </ul>	
7.	Johnson et al. (2020)	Strengths, gaps, and opportunities: Results of a state- wide community needs assessment of paediatric palliative care and hospice resources	Key informants (providers)	Community needs assessment; mixed-methods approach	Georgia, USA	<ul> <li>Policy level</li> <li>Unequal availability of paediatric palliative care services in urban and rural areas</li> <li>Organizational level</li> <li>Lack of collaboration with external resources</li> <li>Healthcare provider level</li> <li>Confusion among providers regarding hospice v. paediatric palliative care</li> <li>Patient and family level</li> <li>Misunderstanding of paediatric palliative care and hospice care</li> </ul>	<ul> <li>Policy level</li> <li>Educate and train providers</li> <li>Working group to give professional recommendations</li> <li>Financial resource pooling</li> <li>Organizational level</li> <li>Networking of palliative care teams</li> <li>Incentives for promoting paediatric palliative care</li> <li>Lobbying and creating awareness for paediatric palliative care</li> <li>Patient and family level</li> <li>Increase community and patient education</li> </ul>	

S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
8.	Hill <i>et al.</i> (2020)	Seven types of uncertainty when clinicians care for paediatric patients with advanced cancer	Paediatric oncology team members	Discussions, group activities, and semi-structured interviews	Philadelphia, USA	<ul> <li>Healthcare provider level</li> <li>Referral to paediatric palliative care is delayed due to uncertainties such as prognostic, informational, individual, communication, relational, collegial, and inter-institutional issues</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Overcome the challenging situation</li> <li>Learn to communicate bad news</li> <li>Develop strategies to overcome difficulties during interaction with family members and healthcare workers</li> <li>Organizational collaboration</li> </ul>	
9.	De Clercq et al. (2019)	The conceptual understanding of paediatric palliative care: A Swiss healthcare perspective	Healthcare providers	Focus group interviews	Switzerland	<ul> <li>Patient and family level</li> <li>Negative perception of paediatric palliative care</li> <li>Healthcare provider level</li> <li>Misconception about the need of palliative care</li> <li>Reluctance among healthcare providers to provide palliative care</li> <li>Late referrals in practice</li> <li>Diluted meaning of paediatric palliative care</li> <li>Institutional meaning of paediatric palliative care</li> <li>Cultural and religious differences</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Early implementation of paediatric palliative care</li> <li>Use of synonyms such as comfort care or supportive care</li> <li>Explicit use of terminology paediatric palliative care</li> <li>Positive word of mouth from satisfied families</li> <li>Support by a specialized paediatric palliative care team</li> </ul>	
10.	Zuniga- Villanueva <i>et al.</i> (2019)	Factors associated with knowledge and comfort providing palliative care: A survey of paediatricians in Mexico	Paediatricians	Online survey	Mexico	<ul> <li>Healthcare provider level</li> <li>Providers are not comfortable addressing the palliative needs of children and family members</li> </ul>	Healthcare provider level • Education and training to develop strategies to overcome the issue	
11.	Kaye <i>et al.</i> (2019)	Provision of palliative and hospice care to children in the community: A population study of hospice nurses	Hospice nurses	Cross-sectional survey	USA	<ul> <li>Healthcare provider level</li> <li>Lack of training and experience among nurses</li> <li>Nurses are not comfortable providing palliative care to children</li> </ul>	<ul> <li>Organizational level</li> <li>Educational resource development and training of healthcare personnel</li> <li>Policy level</li> <li>Child and family-centred policy</li> </ul>	
12.	Spruit et al. (2018)	Knowledge, beliefs, and behaviours related to palliative care delivery among paediatric oncology health care providers	Healthcare professionals	Cross-sectional, descriptive survey design	USA	<ul> <li>Healthcare provider level</li> <li>Negative connotation of paediatric palliative care</li> <li>Discomfort or limited knowledge</li> <li>Difficult prognostication</li> <li>Oncologists believe that they are already providing what is offered by palliative care services</li> </ul>	<ul> <li>Policy level</li> <li>Include paediatric palliative care in academic programmes preparing healthcare personnel</li> <li>Nurses should be empowered to send consultations for palliative care services through policy change</li> </ul>	

S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
						Organizational level • Time constraints • Limited resources • Insurance coverage Patient and family level • Misinterpretation of palliative care • Family resistance	<ul> <li>Organizational level</li> <li>Offer in-service paediatric palliative care education</li> <li>Early initiation of palliative care</li> <li>Integration of palliative care team</li> <li>Continuous research in field of paediatric palliative care</li> <li>Education and awareness of palliative care among the public and policy-makers</li> </ul>	
13.	Esmaili et al. (2018)	Qualitative ) analysis of palliative care for paediatric patients with cancer at Bugando Medical Center: An evaluation of barriers to providing end-of- life care in a resource-limited setting	1	In-depth interviews and participant observation	Tanzania	<ul> <li>Policy level</li> <li>Financial resource constraints</li> <li>Deficiencies in infrastructure or hospital resources</li> <li>Inadequate supply of opioids</li> <li>Patient and family level</li> <li>Underreporting of pain due to socio-cultural expectations of stoicism and tolerance</li> <li>Healthcare provider level</li> <li>Lack of communication among staff and patient or family members</li> <li>Lack of confidence and inability to discuss death</li> <li>Under prioritizing palliative care by staff</li> <li>Stigmatization of death and suffering</li> <li>Inadequate pain management</li> </ul>	<ul> <li>Patient and family level</li> <li>Support and educate families to overcome misconceptions and fears related to palliative care</li> <li>Policy level</li> <li>Design more appropriate and effective palliative care policies for children</li> <li>Healthcare provider level</li> <li>Awareness should be increased</li> <li>Accessibility of opioids</li> <li>Solutions based on natural strengths</li> <li>Multidisciplinary research in paediatric palliative care</li> </ul>	
14.	Nyiro <i>et al.</i> (2018)	The timing and circumstances of the implementa- tion of paediatric palliative care in Hungarian paediatric oncology	Paediatric oncology physicians	An exploratory study using a semi- structured interview	Hungary	<ul> <li>Healthcare provider level</li> <li>Non-availability of widely accepted unified practice or implementation of paediatric palliative care</li> <li>Late implementation due to misconceptions</li> <li>Organizational level</li> <li>Lack of designated paediatric palliative care teams</li> </ul>	Healthcare provider level • Physicians should reconsider and update their approaches to paediatric palliative care implementation and discussion with parent	
15.	Dalberg et al. (2018)	Perceptions of barriers and facilitators to early integration of paediatric palliative care: A national survey of paediatric oncology providers	Paediatric oncology providers	Prospective survey	USA	<ul> <li>Healthcare provider level</li> <li>Roles of oncology and palliative care team</li> <li>Physicians want to maintain control over the total care of their patients</li> <li>Emotional relationships with patients and families</li> <li>Patient and family level</li> <li>Negative perception of paediatric palliative care</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Interdisciplinary communication would be improved with early integration of palliative care</li> <li>Early initiation of paediatric palliative care referral</li> <li>Evidence-based literature is needed</li> <li>Patient and family level</li> <li>Family education for creating awareness and optimal use of palliative care</li> </ul>	

S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
16.	Szymczak et al. (2018)	Paediatric oncology providers' perceptions of a palliative care service: The influence of emotional esteem and emotional labor	Paediatric oncology providers	Semi-structured qualitative interviews		<ul> <li>Healthcare provider level</li> <li>Reluctance and uncertainty of timing</li> <li>Considerable emotional labour in calling paediatric palliative care consult</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Early initiation of paediatric palliative care</li> <li>Focus on the emotional aspect</li> </ul>	
17.	Ngwenya <i>et al.</i> (2019)	Qualitative situational analysis of palliative care for adolescents with cancer and HIV in South Africa: Healthcare worker perceptions	Healthcare Providers	Process mapping	South Africa	<ul> <li>Organizational level</li> <li>Lack of resources</li> <li>Healthcare provider level</li> <li>Misconceptions about paediatric palliative care among the public and providers</li> <li>Lack of paediatric palliative care education among professionals</li> <li>Lack of adolescent-specific care</li> <li>Lack of healthcare professionals who can prescribe morphine</li> <li>Patient and family level</li> <li>Lack of public awareness</li> </ul>	<ul> <li>Organizational level</li> <li>Integration of paediatric palliative care in mainstream health services</li> <li>Training of healthcare personnel</li> <li>Absorb palliative care philosophy and practice at all levels of care</li> <li>Apply a community-based model</li> <li>Empowerment of nurses who can prescribe pain medications</li> </ul>	
18.	Chong and Abdullah (2017)	Community palliative care nurses' challenges and coping strategies on delivering home- based paediatric palliative care: A qualitative study	Nurses	A qualitative study using semi-structured interviews	Malaysia	<ul> <li>Healthcare provider level</li> <li>Communication with children or parents or caregivers</li> <li>Lack of training and knowledge</li> <li>Emotional suffering</li> <li>Moral distress</li> <li>Fear or guilt from inexperience</li> <li>Organizational level</li> <li>Lack of other disciplines in the team</li> <li>Fewer paediatric referrals</li> <li>Perceived excessive workload</li> <li>Lack of resources</li> </ul>	<ul> <li>Policy level</li> <li>Incorporation of paediatric palliative care in teaching and training of all undergraduate courses for healthcare personnel</li> <li>Organizational level</li> <li>Provide organizational support to the nurses in the community</li> <li>Collaboration between paediatricians and community palliative services</li> <li>Develop standards for paediatric palliative care</li> </ul>	
19.	Taylor and Aldridge (2017)	Exploring the rewards and challenges of paediatric palliative care work	Healthcare providers working in multi- disciplinary hospice care team	Qualitative approach	UK	<ul> <li>Healthcare provider level</li> <li>Palliative care work is emotionally intensive and has many different aspects</li> <li>Stress due to getting it right for the children</li> <li>Work-related stress</li> </ul>	<ul> <li>Organizational level</li> <li>Training of healthcare personnel</li> <li>Healthcare provider level</li> <li>Colleagues should support each other informally</li> </ul>	
20.	Chong <i>et al.</i> (2017)	Paediatric palliative care in the Asia Pacific region: Where are we now?	Healthcare providers	Online survey	Asia Pacific region	<ul> <li>Policy level</li> <li>Funding issues</li> <li>Opioid availability</li> <li>Services need to cater to a large area</li> <li>Lack of support from the government</li> </ul>	<ul> <li>Policy level</li> <li>Mentoring and proving guidelines for practice to countries with low availability</li> <li>Availability and meeting opioid demands</li> </ul>	

S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
						Organizational level • Lack of trained workforce • Low rates and late referral • Excess workload • Lack of providers in the community • High use of medical technology Patient and family level • Lack of awareness among patients, family, and the community	Organizational level • Training and capacity building of healthcare providers	
21.	Mojen <i>et al.</i> (2017)	Palliative care for children with cancer in the Middle East: A comparative study	Target countries	Comparative study	Egypt, Lebanon, Jordan, Turkey, and Iran/Middle East Jordan	<ul> <li>Policy level</li> <li>Lack of policy support</li> <li>Inadequate access to opioids</li> <li>Financial constraints</li> <li>Healthcare provider level</li> <li>Lack of professional knowledge</li> </ul>	<ul> <li>Policy level</li> <li>Education of health workforce</li> <li>Integration of palliative care in curriculum</li> <li>Supportive policy regarding opioids</li> <li>Integrated of palliative care in health systems of the countries</li> <li>Organizational level</li> <li>Research in the field of paediatric palliative care</li> <li>Participation of non-governmental organizations</li> </ul>	
22.	Khraisat <i>et al.</i> (2017)	Paediatric end-of- life care barriers and facilitators: Perception of nursing professionals in Jordan	Critical care nurses	Descriptive cross- sectional study		<ul> <li>Healthcare provider level</li> <li>Difference of opinion among physicians</li> <li>No support person available for family</li> <li>Patient and family level</li> <li>Difficulty in dealing with angry family members</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Agreement among involved physicians about the direction of care</li> <li>Education about paediatric palliative care and support for paediatric staff</li> <li>Organizational level</li> <li>Development of paediatric end-of-life care team</li> <li>Patient and family level</li> <li>Receptive and understanding of the family members</li> </ul>	
23.	Twamley <i>et al.</i> (2014)	Underlying barriers to referral to paediatric palliative care services: Knowledge and attitudes of healthcare professionals in a paediatric tertiary care centre in the UK	Healthcare providers	Cross-sectional survey	UK Iran	<ul> <li>Healthcare provider level</li> <li>Unfavourable attitude of healthcare providers despite adequate knowledge</li> <li>Misconceptions about palliative care</li> </ul>	<ul> <li>Healthcare provider level</li> <li>Further research for integration of paediatripalliative care</li> <li>Training and education</li> </ul>	

S.No.	Author	Study title	Population	Method	Country/region	Findings		
	(year)					Challenges	Opportunities/recommendations	
24.	Iranmanesh et al. (2016)	Nursing staff's perception of barriers in providing end-of- life care to terminally ill paediatric patients in Southeast Iran	Critical care nurses	Survey	South Africa,	<ul> <li>Organizational level</li> <li>Lack of palliative care education and units Patient and family level</li> <li>Family members are reluctant to accept the poor prognosis</li> <li>Non-availability of a support person</li> </ul>	<ul> <li>Organizational level</li> <li>Educating healthcare providers to provide culturally appropriate care</li> <li>Patient and family level</li> <li>Education of families</li> <li>Active involvement of religious leaders</li> </ul>	
25.	Connor <i>et al.</i> (2014)	Assessment of the need for palliative care for children in South Africa	U	Design cross- sectional approach—mixed methods	Kenya, and Zimbabwe	<ul> <li>Policy level</li> <li>Focus of policy not adequate</li> <li>Limited funding</li> <li>Gaps in governance (including policy)</li> <li>Organizational level</li> <li>Narrow focus of non-governmental organizations delivering paediatric palliative care</li> <li>Healthcare provider level</li> <li>Knowledge and understanding of paediatric palliative care</li> <li>Reluctance to prescribe and/or administer</li> </ul>	<ul> <li>Policy level</li> <li>Integration of paediatric palliative care in the health system</li> <li>Strengthening health systems</li> <li>Funding should be the priority for paediatric palliative care</li> <li>Healthcare provider level</li> <li>Training of healthcare workers</li> <li>Integration of paediatric palliative care into the training</li> <li>Patient and family level</li> <li>Demand creation</li> </ul>	
26.	Dalberg et al. (2013)	Pediatric oncology provider perceptions of barriers and facilitators to early integration of pediatric palliative care	Paediatric oncology providers	Focus group study (qualitative)	Portland	<ul> <li>morphine</li> <li>Healthcare provider level</li> <li>Differences of perception among providers about the adequacy of palliative care on unmet needs of patients</li> <li>Resistance to the integration of palliative care team among clinicians</li> <li>Conflict whether palliative care is consistent with curative therapy</li> <li>Differences of opinion among providers</li> <li>Anxiety among family members to meeting palliative care team</li> <li>Emotions of clinicians</li> <li>Patient and family level</li> <li>Misconception about palliative care</li> </ul>	<ul> <li>Increased awareness among the community</li> <li>Healthcare provider level</li> <li>Improving communication and documentation</li> <li>Objective opinion</li> <li>Early integration of palliative care</li> <li>Educating patients and families</li> <li>Evidence-based approach to ascertain the benefits of palliative care</li> </ul>	
27.	Knapp and Thompson (2012)	Factors associated with perceived barriers to paediatric	Paediatricians	Cross-sectional survey	USA/ Florida and California	<ul> <li>Patient and family level</li> <li>Reluctance from family to accept palliative care due to negative perception</li> <li>Finances and reimbursement of expenses</li> </ul>	<ul><li>Patient and family level</li><li>Educate family members and healthcare personnel</li></ul>	
28.	Varela <i>et</i> <i>al.</i> (2012)	palliative care Barriers to hospice for children as perceived by hospice	Representatives of hospice organizations	Web-based survey through email	North Carolina	<ul> <li>Healthcare provider level</li> <li>Lack of referrals to hospice</li> <li>Negative perception of paediatric palliative care</li> <li>Complex care needs of children</li> </ul>	Organizational level • Flexible services • Concurrent access to hospice services • Pre-employment education and training	

S.No. Author	Study title	Population	n Method	Country/region	Findings		
(year)					Challenges	Opportunities/recommendations	
	organizations in North Carolina				<ul><li>Lack of trained workforce</li><li>Language barrier</li></ul>	<ul> <li>Clinical rotation of physician for understanding and integrating palliative care in other clinical practices</li> <li>Healthcare provider level</li> <li>Nurses experienced in working with children</li> <li>Able to speak with non-English speaking patients</li> </ul>	

TABLE I. Characteristics and summary of the literature related to palliative care in children with life-limiting illnesses