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ORIGINAL RESEARCH

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Bridging gaps in pediatric oral mucositis management: insights into practitioner knowledge, attitudes and practices across three nations

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Abstract

Background: Oral mucositis (OM) is a common and severe complication of anti-neoplastic therapy, affecting up to 100% of pediatric patients receiving high-dose cancer treatments. Despite its prevalence, gaps in interdisciplinary collaboration and variations in management approaches persist. This study aimed to evaluate the knowledge, attitudes, and practices of healthcare professionals managing OM in pediatric oncology patients across Saudi Arabia, Pakistan, and Malaysia. **Methods**: A cross-sectional survey was conducted among 1020 practitioners, including dentists and oncologists, using a structured questionnaire. The survey assessed their awareness, behavior, and treatment approaches toward OM management. Data were analyzed using SPSS version 21.0, employing Chi-square and Spearman's correlation tests to evaluate associations between demographic variables and responses. **Results**: There were 1020 responses from the practitioners of the three countries with majority of the females (62.1%) trailed by males (37.9%). The range of the age was 29–61 yr. In general, higher than 62.8% of individuals from three countries demonstrated to have adequate level of awareness related to the OM. Though more than 83% of the practitioners did not shown willingness of discussing therapeutic options with the patient/guardians; additionally the practitioners preferred to treat the patient for OM without further referral to the specialist treating the oral diseases (71%–92%). The practitioner stated limitation in inter-disciplinary collaborations among the specialties; notably between oncologists and dental practitioners. Majority of the practitioners of three countries stated to have interest in early detection and learning new therapeutic modalities for OM (70%). **Conclusions**: The study underscores the need for enhanced interdisciplinary collaboration, practitioner training, and patient education to optimize OM management in pediatric oncology. Addressing these gaps through evidence-based interventions and innovative therapies could improve treatment outcomes and quality of life for affected patients.

Keywords

Oral mucositis; Pediatric; Awareness; Comportment; Practice

1. Introduction

Cancer has emerged as one of the leading causes of death worldwide, and its prevalence is expected to rise dramatically—by nearly 70%—over the next two decades [1]. In the Middle East, the occurrence of cancer has shown a notable upward trend, underscoring the urgent need for effective therapeutic strategies and supportive care measures [2]. Current anti-cancer treatments aim to inhibit or destroy malignant cell growth and include chemotherapy, radiotherapy, immunotherapy, targeted therapy, hormonal therapy, stem cell transplantation, and surgical interventions [3]. However, while these therapies are designed to target cancer cells, they often inadvertently damage healthy tissues, leading to adverse side effects. Among these, oral mucositis (OM) affects between 40% to 100% of patients receiving conventional therapies, and nearly all patients undergoing high-dose treatments experience this condition [4].

The severity of OM is influenced by several factors, such as the type of cancer, the specific chemotherapeutic agent used, the intensity of radiation therapy, patient age, and neutrophil levels [5, 6]. Pediatric cancer patients are particularly vulnerable, with OM prevalence ranging from 52% to 100% in this group [7]. Chemotherapeutic agents most commonly associated with OM are outlined in Fig. 1. Notably, the clinical symptoms are consistent among patients undergoing either

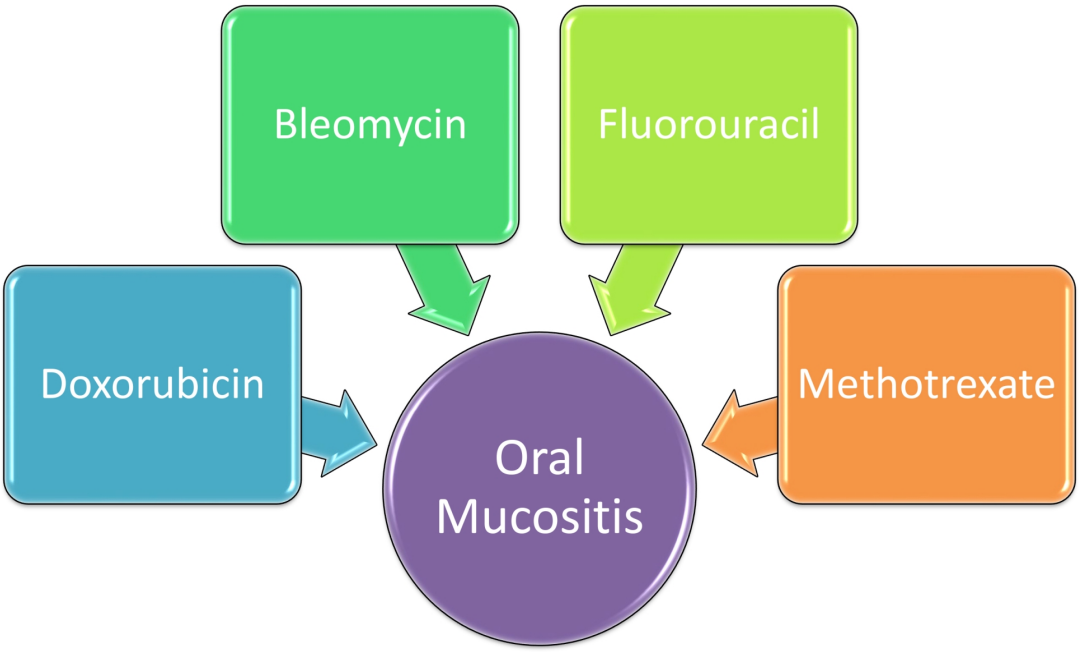

FIGURE 1. Chemotherapeutic drugs commonly used in pediatric patients for anti-neoplastic therapy.

chemotherapy or radiotherapy [5, 8].

Various strategies have been employed to prevent or manage OM in children undergoing cancer treatment, but there is limited evidence regarding their efficacy [9]. Common interventions include basic oral hygiene protocols, topical anti-inflammatory and anesthetic agents, antimicrobial coatings, cryotherapy, laser therapy and alternative remedies [10, 11]. Clinical guidelines often recommend basic oral care and cryotherapy as preventive measures for chemotherapy-induced OM in children [12]. However, adherence to these guidelines is inconsistent, and practices vary significantly across healthcare institutions and providers. Standardizing OM management practices requires a clearer understanding of current approaches.

In countries like Saudi Arabia, Pakistan and Malaysia, research has explored pediatric cancer epidemiology [13], but little is known about healthcare professionals' awareness, attitudes, and practices related to OM management. With increasingly intensive cancer treatments, the incidence and severity of OM are expected to rise [14]. It is crucial for healthcare providers in these regions to be prepared to manage this complication effectively in children receiving anti-cancer therapies. This study aims to evaluate the knowledge, attitudes and practices of professionals treating pediatric OM patients undergoing such therapies. Identifying gaps in current approaches can help improve prevention and treatment outcomes.

2. Materials and methods

A study was conducted to assess the knowledge, behavior, and attitudes of practitioners regarding the management of oral mucositis (OM) in pediatric patients. Oral mucositis is a condition where the lining of the mouth becomes inflamed, often leading to pain, redness and sores. This typically happens as a side effect of certain cancer treatments, like chemotherapy or radiation therapy, which can damage the rapidly dividing cells in the mouth. The symptoms can make eating, drinking, and speaking uncomfortable, impacting a person's overall quality of life during treatment. It's a temporary condition, but managing it effectively is important to reduce discomfort and avoid complications like infection. This survey was initiated after obtaining ethical clearance from the Institutional Review Board Committee at Riyadh Elm University. A modified version of a questionnaire used in a prior study [15] served as the basis for this survey. While the earlier research focused on evaluating dental practitioners' knowledge and practices concerning photodynamic therapies, the current survey was tailored to specifically examine the perspectives and treatment approaches of professionals managing OM.

The study targeted practitioners from Saudi Arabia, Pakistan, and Malaysia, specifically those commonly *involved* in OM treatment. The questionnaire was distributed electronically through platforms such as WhatsApp, Telegram, Facebook, LinkedIn, and email, using Google Forms for data collection. The sample size was calculated prior to commencement of the study was approximately 118 respondents required from each population. The sample size (n) was calculated according to the formula: $n = [z^2 \times p \times (1 - p)/e^2]/[1 + (z^2 \times p \times (1 - p)/(e^2 \times N))]$. Where: $z = 1.96$ for a confidence level (α) of 95%, p = proportion (expressed as a decimal), N = population size, e = margin of error. $z = 1.96$, $\rho = 0.5$.

To ensure relevant data, strict inclusion criteria were applied. Participants included professionals specializing in pediatric dentistry, oral and maxillofacial surgery, oral medicine, pediatric oncology, and general oncology, provided they had graduated or completed board training from medical or dental schools in the selected countries. Practitioners with post-graduate qualifications from other countries were excluded. The respondents were selected on validating the records from the hospital who were *involved* in the treatment of OM. The

questionnaire was completed anonymously by the respondents. The data was collected from May 2024 till September 2024.

The complete questionnaire is available supplementary data. The survey form included 18 questions designed to evaluate three main aspects: awareness, behavior and perceptions related to OM treatment in pediatric patients. Respondents participated voluntarily without any conflicts of interest. The questionnaire started with demographic information, including age, gender, designation, years of experience and details of their postgraduate institution. Following this, six closed-ended true/false questions assessed awareness of OM therapy, including its applicability and suitability for different specialties.

The subsequent sections evaluated the behavior and attitudes of practitioners using nine Likert-scale questions and one open-ended question. The open-ended question explored the therapeutic approaches commonly employed by practitioners for pediatric OM patients undergoing antineoplastic therapy. Responses to Likert-scale questions were scored on a scale of 1 to 4, reflecting the intensity of their agreement or practice.

The gathered data were statistically analyzed using SPSS version 21.0 (IBM, Chicago, IL, USA). Non-parametric Chi-square tests compared variables such as age, clinical experience, and designation. Additionally, Spearman's correlation coefficient test was used to determine statistical relationships between awareness, behavior and attitudes towards OM therapy.

3. Results

The survey was distributed to practitioners who frequently treat and assess pediatric patients undergoing anti-neoplastic therapy. On average, participants took 8.65 minutes to complete the survey. Among the respondents, 387 (37.9%) were male, and 633 (62.1%) were female, totaling 1020 participants from three countries. These practitioners, aged between 29 and 61 years, had completed postgraduate training at medical or dental institutions in the respective countries, as detailed in Table 1 under the socio-demographic profiles of the respondents.

The practitioners' knowledge was assessed using six true/false questions, illustrated in Fig. 2. Q1: OM is a common side effect of chemotherapy and radiotherapy, particularly in patients receiving treatment for head and neck cancers (correct answer: true); Q2: Oral mucositis is only associated with cancer treatments, and it cannot occur in patients receiving other types of therapy, such as bone marrow transplants (correct answer: false); Q3: The severity of OM can be reduced by using oral cryotherapy (cold therapy) during chemotherapy (correct answer: true); Q4: A proactive oral care regimen, including mouth rinses and good oral hygiene, has no significant effect on the prevention or management of oral mucositis (correct answer: false); Q5: Patients with severe OM are at increased risk of systemic infections due to the compromised mucosal barrier (correct answer: true); Q6: Palifermin (a keratinocyte growth factor) is an approved treatment for reducing the incidence and severity of OM in patients undergoing high-dose chemotherapy and radiation for hematologic cancers (correct answer: true). On average, over 62.8% of respondents demonstrated sufficient understanding of the causes, progression, and treatment options for oral mucositis (OM). A maximum score of 5 was achieved by an average of 67.5% of participants.

The final question in the knowledge component explored practitioners' perceptions regarding photodynamic (PD) therapy and its application in OM management. Practitioners generally viewed PD therapy as an emerging treatment modality, particularly suitable for specialists in oral and maxillofacial surgery.

Responses to the second component of the survey are shown in Fig. 3. Fig. 3a,b examined practitioners' attitudes towards discussing OM treatment options with patients or their guardians. Approximately 90% of practitioners across the three countries reported that patients or guardians rarely expressed concerns or possessed prior knowledge of OM therapies. Consequently, around 83% of practitioners did not engage in discussions about multiple treatment options. Moreover, a significant majority (71%–92%) preferred managing OM cases themselves rather than referring patients to other specialists.

The practitioners' approaches and perceptions regarding pediatric OM treatment are summarized in Figs. 4,5. Most practitioners (75.48%–82.76%) adhered to self-defined protocols for routinely assessing pediatric patients receiving anti-neoplastic therapy (Fig. 4a). Additionally, the majority believed that current treatment options effectively alleviate patient pain and discomfort (81.26%–90.64%, Fig. 4b). Practitioners recognized OM as a prominent issue in oncology care (Fig. 4c) and noted gaps in collaboration between oncologists and dental professionals for optimal OM management.

Regarding training and practice, more than 70% of practitioners expressed interest in receiving enhanced training to detect and manage OM at its early stages. There was broad disagreement (strongly disagree/disagree) with the notion that delayed OM treatment could positively impact cancer therapy by maintaining dosage and protocols. Pediatric patients most frequently affected by OM were undergoing treatment for acute lymphoid leukemia, followed by non-Hodgkin's lymphoma (Fig. 5a). Overall, practitioners rated their knowledge of OM as acceptable to good.

A comparative statistical analysis revealed significant differences in knowledge levels across designations, including residents (ρ = 0.032; 0.028; 0.031), senior residents (ρ = 0.026; 0.041; 0.038), consultants (ρ = 0.037; 0.044; 0.040), senior consultants (ρ = 0.039; 0.032; 0.031), and others (ρ = 0.047; 0.042; 0.036). However, Spearman's correlation test indicated no significant relationship between awareness levels (r (interquartile range) = 0.11, $\rho \geq 0.05$), attitudes (r (interquartile range) = 0.18, $\rho \geq 0.05$), and practices (r (interquartile range) = 0.19, $\rho \geq 0.05$) among practitioners across the three countries.

4. Discussion

This study sheds light on the knowledge, attitudes, and practices of healthcare practitioners *involved* in the management of oral mucositis (OM) in pediatric patients undergoing anti-neoplastic therapy across Saudi Arabia, Pakistan, and Malaysia. The results reveal encouraging levels of awareness regarding OM among practitioners, with over

TABLE 1. The demographic profiles of practitioner responded the questionnaire.

	Saudi Arabia		Pakistan		Malaysia	
Age (Median)	29–57 (41)		32–61 (39)		36–58 (46)	
Gender						
Male, n (%)	226 (55.7)		120 (26.1)		41 (26.5)	
Female, n (%)	180 (44.3)		339 (73.9)		114 (73.5)	
Designation						
Resident, n (%)	143 (35.2)		142 (30.9)		47 (30.3)	
Senior Resident, n (%)	113 (27.8)		161 (35.1)		54 (34.8)	
Consultant, n (%)	78 (19.2)		97 (21.1)		32 (20.7)	
Senior Consultant, n (%)	49 (12.1)		55 (11.9)		18 (11.6)	
Others, n (%)	23 (5.6)		4 (0.9)		4 (2.6)	
Clinical experience in years						
<1, n (%)	18 (4.4)		17 (3.7)		8 (5.2)	
1–5, n (%)	189 (46.6)		189 (41.2)		68 (43.9)	
6–10, n (%)	156 (38.4)		203 (44.2)		48 (30.9)	
≥11, n (%)	43 (10.6)		50 (10.9)		31 (20.0)	
Graduating dental school (n)						
	King Saudi University of Health Sciences	62	De' Montmorency College of Dentistry	61	University of Malaya	42
	King AbdulAziz University	54	Riphah International University	57	Universiti Kebangsaan Malaysia	26
	King Khalid University	48	Nishtar Medical University	63	International Medical University	21
	Imam Abdulrahman Bin Faisal University	59	Khyber College of Dentistry	38	Asian Institute of Medicine, Science and Technology (AIMST) University	9
	Jazan University	11	Liaquat College of Medical & Dentistry	38	Universiti Sains Malaysia	34
	Taibah University	28	Fatima Memorial Hospital (FMH) College of Medicine & Dentistry	54	SEGi University	14
	King Faisal University	8	Ziauddin Medical University	37	Malaysian Allied Health Sciences Academy (MAHSA) University	6
	Qassim University	7	Baqai Medical University	27	Melaka Manipal Medical College	3
	Al Jouf University	2	Sohail University	16		
	Prince Sattam Bin Abdulaziz University	14	Jinnah Sindh Medical University	19		
	King Saud bin Abdulaziz University for Health Sciences	41	Dow University of Health Sciences	8		

TABLE 1. Continued.

Saudi Arabia		Pakistan		Malaysia
Umm Al-Qura University	17	Karachi Medical and Dental College	13	
Princess Nora bint Abdulrahman University	32	Bahria Medical College	19	
Riyadh Elm University	12	Bin Qasim Medical Institute	2	
Dar Al Uloom University	7	Altamash Institute of Dental Medicine	7	
Al Farabi Dental College (Vision Colleges)	4			

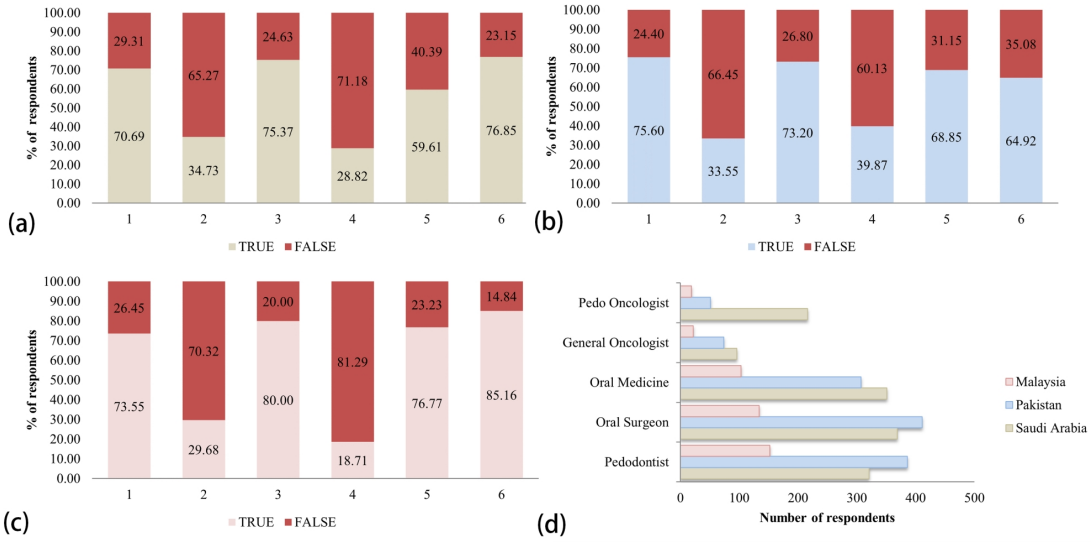

FIGURE 2. The figures display responses of practitioners from different populations towards awareness regarding treating oral mucositis (red color displays section for the respondents selection option False for (a)–(d)). (a) Response of the six questions from Saudi Arabian practitioners for six question (individuals answering correctly 70.7%, 65.27%, 75.4%, 71.2%, 59.6%, 76.9%). (b) responses from Pakistani practitioners (individuals answering correctly for six questions 75.6%, 66.5%, 73.2%, 60.1%, 68.9%, 64.9%). (c) answers from Malaysian practitioners (individuals answering correctly for six questions 73.6%, 70.3%, 80%, 81.3%, 76.8%, 85.2%). (d) (Q7) perception for the use of PD therapy by practitioners to be used by specific specialty in OM therapy by the dental practitioners of different countries.

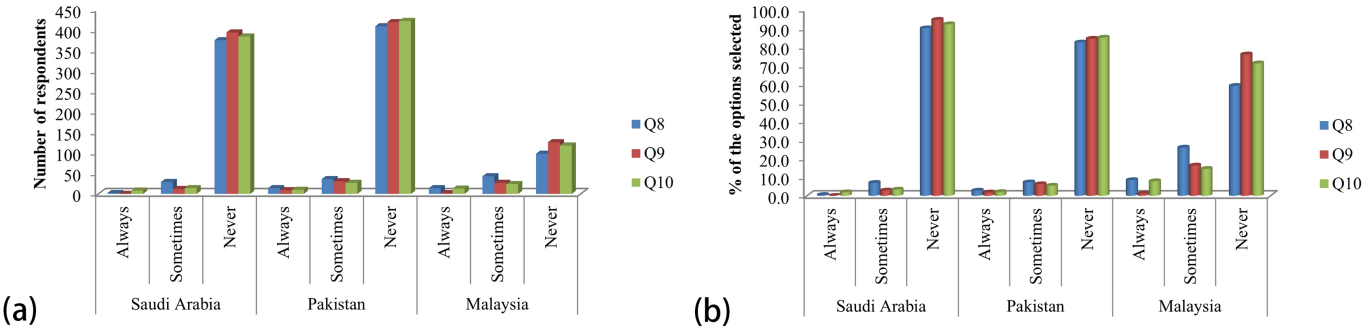

FIGURE 3. Comportment of practitioners for the therapy of OM. Q8: Do patients/guardians reporting to dental clinic have information regarding therapeutic options of OM? Q9: Do you discuss therapeutic options for OM with your patient/guardians? Q10: Do you prefer to refer the patients to other clinicians for treatment of OM? (a) The answer selected by the number of respondents from different countries. (b) The percentage of answer selected by the dental practitioners of various countries.

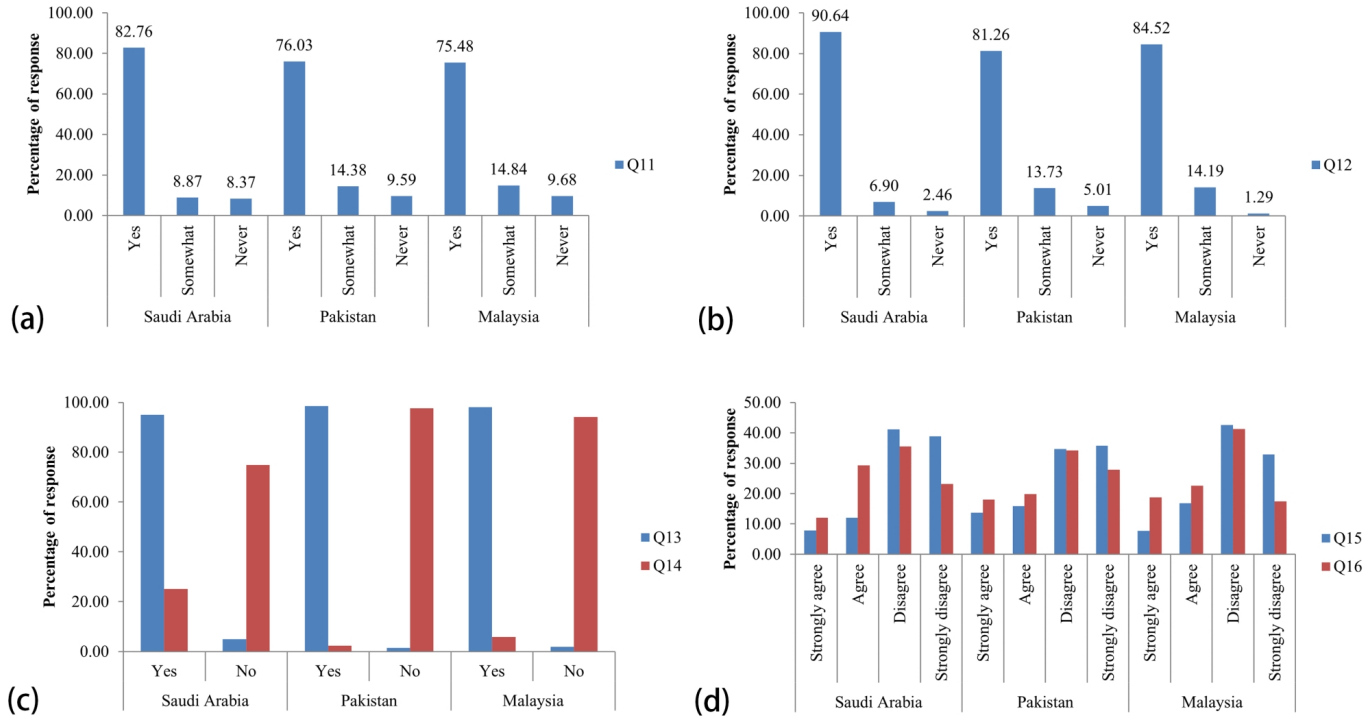

FIGURE 4. Attitude of practitioners towards the OM therapy in pediatric patients. Q11: Do you routinely assess patients for signs of OM in patients undergoing anti-cancer treatments? Q12: Do you find the current treatments strategies for OM to be effective in alleviating patient discomfort? Q13: Is OM a significant concern in the overall management of oncology patients? Q14: Do you believe there is enough inter-disciplinary collaboration between oncologists and dental professionals to manage OM? Q15: There is a no need for more training in the early detection and management of OM. Q16: Managing OM at later stage has a positive impact on a patient's overall cancer treatment outcomes. (a–d) Percentage of answers selected by the number of practitioners treating OM from different countries.

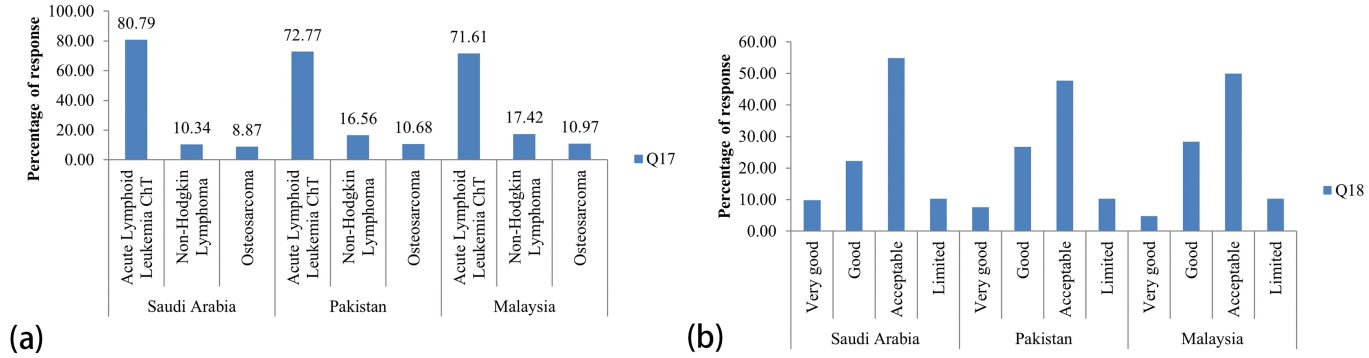

FIGURE 5. Practice of practitioners in percentage from various countries for the therapy of OM. (a) Displays the responses for the Q17 inquiring about the "Pediatric patients affected with which type of cancerous condition are commonly observed to have OM (maximum three)?". (b) Shows the data regarding Q18 evaluating the "Level of knowledge perceived by practitioners for the OM".

62.8% demonstrating sufficient understanding of its causes, progression, and therapeutic options. These findings align with earlier research emphasizing the importance of equipping healthcare providers with comprehensive knowledge to address therapy-induced complications in oncology patients [16].

However, a significant gap in interdisciplinary collaboration between dental professionals and oncologists was identified. This lack of coordination is a critical barrier to effective OM management, as a collaborative approach is essential for optimizing patient outcomes. Previous studies have similarly highlighted the need for integrated care models that encourage communication and teamwork between oncology and dental specialties [12, 17].

The practitioners' willingness to engage in further education and training to enhance their skills in OM management is a positive takeaway from this study. Approximately 80% of respondents expressed a strong interest in attending workshops and training programs focused on early detection and tailored treatment strategies. This eagerness aligns with findings from

other regions, which emphasize the critical role of continuous professional development in improving the management of therapy-related complications like OM [18, 19].

The findings also highlight that current treatment modalities for OM are widely accepted by practitioners, with many recognizing their effectiveness in alleviating patient discomfort. The acceptance would likely based on observed improvements in patients' symptoms and overall well-being after receiving these treatments. It indicates a level of confidence among practitioners in the current standard of care for OM. This widespread acceptance also suggests that these treatments are readily available and accessible to patients in the studied regions. However, there is a pressing need for innovative approaches, such as photodynamic therapy (PD), which practitioners identified as a promising alternative. The potential of PD therapy has been documented in various studies, showcasing its efficacy in reducing the severity of OM while improving patient quality of life [20, 21].

A notable concern expressed by respondents is the detrimental impact of delayed OM treatment on cancer therapy. Practitioners acknowledged that complications such as dysphagia, altered or reduced chemotherapy dosages, and nutritional deficiencies could compromise treatment outcomes. These observations are consistent with previous studies that have emphasized the importance of early detection and prompt intervention to prevent such adverse effects [22, 23].

The prevalence of OM among pediatric patients with hematological malignancies, particularly acute lymphoid leukemia and non-Hodgkin's lymphoma, was a consistent finding across all three countries. This trend aligns with global data indicating that these cancers are frequently associated with OM due to the aggressive nature of treatments such as chemotherapy and radiotherapy [24, 25]. The findings reinforce the need for specialized preventive and therapeutic strategies to address OM in pediatric oncology patients.

Despite the practitioners' generally positive self-assessment of their knowledge and practices, gaps remain in patient communication. Approximately 83% of respondents reported limited discussions with patients or their guardians about treatment options for OM. This communication gap is a significant barrier to effective care and highlights the need for patient education programs. Educating patients and their families can empower them to participate actively in care planning, leading to better outcomes [26].

Furthermore, the study revealed variability in attitudes toward referring OM cases to specialists, with many practitioners preferring to manage cases independently. This trend suggests the need for a cultural shift toward embracing collaborative care and specialist referrals when necessary. Encouraging multidisciplinary approaches could bridge gaps in expertise and improve treatment outcomes [27].

The study had limitations that should be considered in future. First, its geographic focus on practitioners from Saudi Arabia, Pakistan, and Malaysia may restrict the applicability of the findings to other regions with diverse healthcare systems and cultural contexts. Additionally, the reliance on self-reported survey data introduces the possibility of response biases, such as overestimation or underestimation of knowledge and practices. Variations in educational backgrounds, clinical experiences, and resource availability among respondents further complicate the consistency of the results. Finally, the exclusion of direct input from patients and their families leaves an important perspective unexamined, which could have enriched the understanding of the challenges and expectations in addressing this condition.

5. Conclusions

In conclusion, this survey provides valuable insights into practitioners' knowledge and attitudes regarding OM management in pediatric oncology patients. While the overall knowledge base appears relatively strong, targeted education is needed to address specific knowledge gaps and variations between countries. The most significant concern arises from the limited communication between practitioners and patients/guardians regarding treatment options. Promoting patient/family education and shared decision-making should be a priority. Finally, further research is needed to clarify the role of emerging therapies like PD therapy in OM management. By addressing these issues, we can strive to improve the quality of life for children experiencing this challenging side effect of cancer treatment.

AVAILABILITY OF DATA AND MATERIALS

The detailed data is available under the materials and methods section.

AUTHOR CONTRIBUTIONS

ZQ, MS, NSA and CS—designed the research study. ZQ, RNR, STA, ZMA and AAA—performed the research. ZQ, STA, SSA and MS—provided help and advice on improving the sample size. NSA, MAA and CS—analyzed the data. ZQ and CS—wrote the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was conducted of approval from the Institutional Review Board Committee of Riyadh Elm University, Riyadh, Saudi Arabia (number: FRP/2025/564/1255). All the participants signed the consent form.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

[1] Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: A Cancer Journal for Clinicians. 2020; 70: 313.

[2] Al Jaouni SK, Al Muhayawi MS, Hussein A, Elfiki I, Al-Raddadi R, Al Muhayawi SM, *et al*. Effects of honey on oral mucositis among pediatric cancer patients undergoing chemo/radiotherapy treatment at King Abdulaziz University Hospital in Jeddah, Kingdom of Saudi Arabia. Evidence-Based Complementary and Alternative Medicine. 2017; 2017: 5861024.

[3] Vail DM, Thamm DH, Liptak JM. Withrow and MacEwen's small animal clinical oncology. 6th edn. Elsevier Health Sciences: Amsterdam. 2019.

[4] Elting LS, Cooksley C, Chambers M, Cantor SB, Manzullo E, Rubenstein EB. The burdens of cancer therapy: clinical and economic outcomes of chemotherapy-induced mucositis. Cancer. 2003; 98: 1531–1539.

[5] Ritwik P. Dental care for patients with childhood cancers. Ochsner Journal. 2018; 18: 351–357.

[6] Docimo R, Anastasio MD, Bensi C. Chemotherapy-induced oral mucositis in children and adolescents: a systematic review. European Archives of Paediatric Dentistry. 2022; 23: 501–511.

[7] Pilas SA, Kurt S. Evaluation of oral mucositis level and affecting factors in cancer patients receiving chemotherapy. Supportive Care in Cancer. 2024; 32: 597.

[8] Oronsky B, Goyal S, Kim MM, Cabrales P, Lybeck M, Caroen S, *et al*. A review of clinical radioprotection and chemoprotection for oral mucositis. Translational Oncology. 2018; 11: 771–778.

[9] Yarom N, Hovan A, Bossi P, Ariyawardana A, Jensen SB, Gobbo M, *et al*. Correction to: systematic review of natural and miscellaneous agents, for the management of oral mucositis in cancer patients and Clinical Practice Guidelines—Part 1: vitamins, minerals and nutritional supplements. Supportive Care in Cancer. 2021; 29: 4175–4176.

[10] Migliorati C, Hewson I, Lalla RV, Antunes HS, Estilo CL, Hodgson B, *et al*. Systematic review of laser and other light therapy for the management of oral mucositis in cancer patients. Supportive Care in Cancer. 2013; 21: 333–341.

[11] Rojas de Morales T, Zambrano O, Rivera L, Navas R, Chaparro N, Bernardonni C, *et al*. Oral-disease prevention in children with cancer: testing preventive protocol effectiveness. Medicina Oral. 2001; 6: 326–334.

[12] Elad S, Cheng KKF, Lalla RV, Yarom N, Hong C, Logan RM, *et al*.; Mucositis Guidelines Leadership Group of the Multinational Association of Supportive Care in Cancer and International Society of Oral Oncology (MASCC/ISOO). MASCC/ISOO clinical practice guidelines for the management of mucositis secondary to cancer therapy. Cancer. 2020; 126: 4423–4431.

[13] Alyami HH, Sadler K, Alghamdi W, Taher L, Alfuaim M, Khan S, *et al*. Translation and validation of the "symptom screening in pediatrics tool" into Arabic for children and adolescents diagnosed with cancer: a multiple-phase descriptive study. Journal of Nursing Science and Professional Practice. 2024; 1: 13–18.

[14] Vera-Llonch M, Oster G, Ford CM, Lu J, Sonis S. Oral mucositis and outcomes of allogeneic hematopoietic stem-cell transplantation in patients with hematologic malignancies. Supportive Care in Cancer. 2007; 15: 491–496.

[15] Qamar Z, Alhaid AS, Altami RM, Bachat AM, Aldosseri DM. Awareness comportment and attitude of dental practitioners for photodynamic therapy during COVID-19 pandemic: a global survey. European Review for Medical and Pharmacological Sciences. 2022; 26: 9480–9488.

[16] Soares JB, de Farias Gabriel A, Kirschnick LB, Carrard VC, Curra M, Schuch LF, *et al*. Oral mucositis assessment in pediatric and adolescent oncological patients: a systematic review. Pediatric Blood & Cancer. 2025; 72: e31388.

[17] Peterson DE, Bensadoun RJ, Roila F; ESMO Guidelines Working Group. Management of oral and gastrointestinal mucositis: ESMO clinical practice guidelines. Annals of Oncology. 2011; 22: vi78–vi84.

[18] Yarom N, Ariyawardana A, Hovan A, Barasch A, Jarvis V, Jensen SB, *et al*.; Mucositis Study Group of the Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISOO). Systematic review of natural agents for the management of oral mucositis in cancer patients. Supportive Care in Cancer. 2013; 21: 3209–3221.

[19] de Farias Gabriel A, Silveira FM, Curra M, Schuch LF, Wagner VP, Martins MAT, *et al*. Risk factors associated with the development of oral mucositis in pediatric oncology patients: systematic review and meta-analysis. Oral Diseases. 2022; 28: 1068–1084.

[20] Joseph B, Mauramo M, Vijayakumary BK, Waltimo T, Anil S, Sorsa T. Photodynamic therapy for oral mucositis in cancer patients—a systematic review and meta-analysis. Photodiagnosis and Photodynamic Therapy. 2024; 50: 104424.

[21] Lessa AFN, Celestino MA, Ferreira JM, Lima IV, Ramos YCS, Vieira FF, *et al*. Antimicrobial photodynamic therapy for the treatment of oral mucositis—a comparative study. Photodiagnosis and Photodynamic Therapy. 2023; 42: 103543.

[22] Sonis ST. The pathobiology of mucositis. Nature reviews. Cancer. 2004; 4: 277–284.

[23] Nurhidayah I, Nurhaeni N, Allenidekania A, Gayatri D, Mediani HS. The effect of oral care intervention in mucositis management among pediatric cancer patients: an updated systematic review. Journal of Multidisciplinary Healthcare. 2024; 17: 3497–3515.

[24] Mürner CM, Stenner-Liewen F, Seifert B, Mueller NJ, Schmidt A, Renner C, *et al*. Efficacy of selective digestive decontamination in patients with multiple myeloma undergoing high-dose chemotherapy and autologous stem cell transplantation. Leukemia & Lymphoma. 2019; 60: 685–695.

[25] Malczewska M, Kośmider K, Bednarz K, Ostapińska K, Lejman M, Zawitkowska J. Recent advances in treatment options for childhood acute lymphoblastic leukemia. Cancers. 2022; 14: 2021.

[26] Rubenstein EB, Peterson DE, Schubert M, Keefe D, McGuire D, Epstein J, *et al*.; Mucositis Study Section of the Multinational Association for Supportive Care in Cancer; International Society for Oral Oncology. Clinical practice guidelines for the prevention and treatment of cancer therapy-induced oral and gastrointestinal mucositis. Cancer. 2004; 100: 2026–2046.

[27] Zuo F, Li T, Chen Y, Wen M, Cao H. Knowledge, attitudes, barriers and practices concerning cancer therapy–associated oral mucositis amongst oncology nurses: a mixed methods systematic review. Asia-Pacific Journal of Oncology Nursing. 2024; 11: 100542.

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