

# Exploring interprofessional education for collaborative practice in oral health education: a scoping review

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## ABSTRACT

**Background:** Interprofessional collaboration supports improved patient care and outcomes. Interprofessional education for collaborative practice (IPECP) in prelicensure education promotes professional/interprofessional socialization. Within IPECP, students gain understanding of their professional role and begin developing an interprofessional identity, including collaborative skills, attitudes, and behaviours. IPECP literature in oral health education is limited. It is not well understood how oral health students are involved in IPECP and prepared for collaborative practice. **Objective:** To assess the literature on IPECP within oral health education and identify IPECP models and characteristics of experiences enabling professional/interprofessional socialization, interprofessional identity development, and readiness for collaborative practice. **Methods:** Guided by JBI methodology, the research team searched CINAHL, DOSS, MEDLINE, and APAPsycInfo for peer-reviewed articles on IPECP models in prelicensure education of oral health students. Articles (N = 321) were screened by 2 reviewers for title/abstract, followed by full text. Twenty-eight articles were included. **Results:** Single and multifactor IPECP models were identified including workshops, case studies, simulation, and clinical experiences. Characteristics of IPECP experiences were identified and categorized as: 1) learning from and about others; 2) establishing social connections; 3) authenticity of experiences; and 4) consistent socialization and exposure. However, challenges for IPECP in oral health education persist, including siloed education and a lack of intentional IPECP curriculum. **Conclusion:** Increased integration of oral health students into health professions IPECP and consistent exposure throughout programs is needed. IPECP curriculum must enable all students to explore their professional contributions to interprofessional teams. IPECP for developing an interprofessional identity in oral health students remains understudied; longitudinal and qualitative analyses are needed.

## RÉSUMÉ

**Contexte :** La collaboration interprofessionnelle favorise l'amélioration des soins et des résultats pour les patients. La Interprofessional Education and Collaborative Practice (formation interprofessionnelle et pratique collaborative, ou IPECP) dans l'éducation préalable à l'agrément favorise la socialisation professionnelle/interprofessionnelle. Au sein de l'IPECP, les étudiants acquièrent une compréhension de leur rôle professionnel et commencent à développer une identité interprofessionnelle, y compris des compétences, des attitudes et des comportements collaboratifs. La documentation de l'IPECP sur la formation en santé buccodentaire est limitée. On ne comprend pas bien comment les étudiants en santé buccodentaire participent à l'IPECP et y sont préparés à la pratique collaborative. **Objectif :** Évaluer la documentation sur l'IPECP dans le cadre de la formation en santé buccodentaire et déterminer les modèles et les caractéristiques des expériences qui permettent la socialisation professionnelle et interprofessionnelle, le développement de l'identité interprofessionnelle et l'état de préparation à la pratique collaborative. **Méthodes :** Guidée par la méthodologie JBI, l'équipe de recherche a effectué des recherches dans CINAHL, DOSS, MEDLINE et APAPsycInfo pour trouver des articles évalués par les pairs sur les modèles IPECP dans l'éducation préalable à l'agrément des étudiants en santé buccodentaire. Les articles (N = 321) ont été examinés par 2 examinateurs pour le titre/résumé, suivis du texte intégral. Vingt-huit articles ont été inclus. **Résultats :** Des modèles IPECP mono et multifactor ont été identifiés, y compris des ateliers, des études de cas, des simulations et des expériences cliniques. Les caractéristiques des expériences de l'IPECP ont été déterminées et classées comme suit : 1) apprentissage des autres et à leur sujet; 2) établissement des liens sociaux; 3) authenticité des expériences; 4) socialisation et exposition cohérentes. Toutefois, les défis liés à l'IPECP en matière de formation en santé buccodentaire persistent, y compris l'éducation cloisonnée et l'absence d'un programme intentionnel de l'IPECP. **Conclusion :** Une intégration accrue des étudiants en santé buccodentaire aux professions de la santé par l'entremise de l'IPECP et une exposition uniforme dans l'ensemble des programmes sont nécessaires. Le programme d'études de l'IPECP doit permettre à tous les étudiants d'explorer leurs contributions professionnelles aux équipes interprofessionnelles. La contribution de l'IPECP au développement d'une identité interprofessionnelle chez les étudiants en santé buccodentaire demeure sous-étudié; des analyses longitudinales et qualitatives sont nécessaires.

**Keywords:** collaborative practice; interprofessional education; interprofessional identity; oral health education; professional identity  
**CDHA Research Agenda category:** capacity building of the profession

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## PRACTICAL IMPLICATIONS OF THIS RESEARCH

- Consistent interprofessional socialization and exposure to collaborative experiences during prelicensure education are needed to support oral health students' development of attitudes and behaviours for interprofessional practice.
- Oral health students' preparedness for collaborative practice and development of an interprofessional identity are contingent on addressing barriers, including limited exposure to authentic IPECP experiences, siloed curriculum, and clinical training environments.

## BACKGROUND

Interprofessional collaborative practice (IPC) among the health professions has been widely recognized as a foundational component of comprehensive health care delivery and effective health systems.<sup>1,2</sup> Global attention to a need to train health professionals to work collaboratively and interprofessionally was prominently influenced by the World Health Organization (WHO)'s publication of *A Framework for Action on Interprofessional Education and Collaborative Practice*.<sup>2</sup> Included within this framework is a call for the integration of interprofessional education (IPE) into the prelicensure curriculum of health professions. Interprofessional education is defined as “occasions where two or more professions learn with, from and about each other to improve collaboration and the quality of care.”<sup>3</sup> There is a growing base of evidence in support of interprofessional education for collaborative practice (IPECP) at the level of prelicensure education to promote students' ability to work and communicate across disciplines, enhancing collaboration and quality of patient-centred health care practice.<sup>4–7</sup> IPECP experiences are varied across the spectrum of health education and include exposure and experiential learning opportunities alongside other students in classroom-based activities, simulation, and clinical patient care. IPECP experiences during prelicensure education are valuable to strengthening IPC in practice as students begin to increase their understanding of their own role, that of other professionals, and how to practise effectively within interprofessional teams.<sup>1,8,9</sup>

An understudied but growing area of research is the exploration of IPECP experiences for professional socialization and their contributions to the development of a professional and interprofessional identity.<sup>1,7,10</sup> Professional socialization (PS) is a process of self-identity construction, whereby exposure to specific social contexts and settings allows individuals to learn and come to embody the responsibilities, attitudes, and social behaviours of their chosen profession.<sup>11,12</sup> The foundations of professional identity formation are laid within students' education programs, and are subject to continuous development and evolution over the formal years of prelicensure education and upon entry to practice.<sup>5–7,13</sup> IPECP experiences have been identified as a catalyst for the development of both a professional identity and the promotion of socialization and understanding among the professions.<sup>1,5</sup> Further, IPECP experiences have been identified as a means of promoting interprofessional socialization (IPS) where values and behaviours conducive to effective teamwork are developed and mutual understanding and trust between professionals are fostered.<sup>5,9</sup> Through collaborative experiences and exposure to other professions, individuals come to develop a “dual” professional and interprofessional identity, which is crucial for enhancing collaboration and effective interprofessional health care teams in practice.<sup>9,10</sup>

A scan of the evidence reveals that studies on IPECP in health professions education have mainly focused on sampling primary care professions, including, nursing, medicine, physiotherapy, as well as dietetics and social work.<sup>14,15</sup> Other health disciplines, including dentistry and dental hygiene, have been largely excluded.<sup>16–18</sup> Dentists and dental hygienists are highly trained and knowledgeable health care professionals, who are experts in the oral-systemic health link and leaders in the management, treatment, and prevention of oral disease. Moreover, they are members of health professions whose roles and scopes are complementary and contributory to one another. They are naturally positioned to be effective collaborators within closely interacting teams.<sup>16,19</sup> Despite collaborative expectations, the professions have been traditionally educated in siloes and have historically followed profession-specific (uniprofessional) curricula and clinical training models during prelicensure education.<sup>16</sup> Providing comprehensive health care and effective care delivery requires interprofessional approaches, where oral health professionals are working together and alongside others in collaborative teams.<sup>20–22</sup> As the burden of oral disease rises globally, shifting legislation in health and oral health policy is likely to accelerate the need for oral health professionals' integration into primary care interprofessional teams in the near future.<sup>23</sup> There is a gap in knowledge, however, and a need to understand how future oral health professionals (dentists and dental hygienists) are educated in and socialized to interprofessional collaborative practice in preparation for entry into the workforce.<sup>17</sup>

The rationale for this scoping review is to better understand how IPECP is currently occurring in oral health professions prelicensure education. While general curriculum design in oral health education may reflect varying levels of IPE theory, this study analyzes IPECP experiences specifically. Models of IPECP are diversely cited in the literature (classroom-based events/workshops, simulation, and clinical practice) and found to vary in timing and duration during students' programs. Understanding what models and characteristics (distinguishing qualities and impactful components) of students' IPECP experiences contribute to professional and interprofessional socialization is needed. A preliminary search of CINAHL (EBSCOhost) and DOSS (Dentistry and Oral Sciences Source) (EBSCOhost) was conducted, and no current or in-progress systematic reviews or scoping reviews were identified on this topic. A scoping review was identified as the most appropriate approach to assess the extent of the literature relevant to current IPECP experiences of oral health students. This knowledge is crucial to identify gaps in current IPECP pedagogy and programming in oral and health education and to direct future research and curricular reform that can support and strengthen IPC and health care teams in practice.

This review was guided by the following research questions:

1. What models and characteristics of IPECP are identified to enable professional and interprofessional socialization and interprofessional identity development amongst oral health students?
2. What IPECP experiences are identified to enable development of collaborative skills, attitudes, behaviours, and readiness for collaborative practice amongst oral health students?

### Inclusion criteria

#### *Population of interest*

The target population of this review was dentistry and/or dental hygiene students within IPECP during their prelicensure education. Despite their status as distinct, regulated professions, dentistry and dental hygiene are often grouped under the umbrella term of “oral health professions.” This umbrella term may also include other oral health care providers, such as dental assistants, therapists, and other professional titles depending on geographical location and national systems for oral health care.<sup>16,23</sup> In this review, “oral health students” will be defined as dentistry and dental hygiene students, and sources of evidence included will be specific to these professions. These professions were selected as they are identified globally to be among the largest of the oral health professions with complementary professional practice scopes and collaborative practice expectations.<sup>23</sup>

#### *Concept*

This review identified IPECP experiences currently offered to oral health students during prelicensure education. IPECP programming includes exposure events and experiential learning where students from 2 or more professions learn with, from, and about each other to develop mutual understanding and the skills, attitudes, and behaviours that support effective interprofessional health care practice.<sup>4</sup> In addition, this review explored the evidence of IPECP experiences for PS and IPS and characteristics of these experiences enabling students’ development of an interprofessional identity and perceived readiness for IPC in future practice.

#### *Context*

This review focused on identifying the contributions of IPECP experiences to students’ professional and interprofessional socialization and identity development, rather than exploring the role of IPECP in achieving explicit learning outcomes. Within the oral health professions literature, the terms “intraprofessional” and “interprofessional” are used interchangeably to describe IPECP experiences involving both dentistry and dental hygiene students. “Intraprofessional” is a term that has been adopted to describe interactions between dentists and dental hygienists, despite their status as members of distinct self-regulated health professions who may practise

independently or collaboratively (interprofessionally) as do non-oral health professionals. Therefore, both terms were included in this review and search strategy.<sup>16,24</sup>

#### *Types of sources*

This scoping review considered quantitative studies on IPECP that used both experimental and quasi-experimental designs such as before and after (pre-test/post-test) studies and interrupted time-series studies. In addition, qualitative studies on IPECP were considered and no restrictions were placed on qualitative methodology used. Mixed-methods studies designed to generate quantitative and qualitative data from a combined approach of research methods and methodologies were also considered.

### METHODS

This scoping review followed an a priori protocol guided by JBI (formerly The Joanna Briggs Institute) methodology for scoping reviews.<sup>25</sup> This contemporary methodology builds upon the seminal scoping review frameworks of Arksey & O’Malley<sup>26</sup> and Levac et al.<sup>27</sup> and aligns itself with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)<sup>28</sup>. As such, it provides a comprehensive and systematic approach to conducting a review of the available literature on IPECP in oral health education. The scoping review protocol is registered in Open Science Framework and has been published elsewhere.<sup>29</sup>

#### *Search strategy*

This review aimed to locate published, peer-reviewed studies on IPECP in oral health education and professional and interprofessional socialization and identity development for oral health students. An initial limited search of CINAHL (EBSCOhost) and DOSS (Dentistry and Oral Sciences Source) (EBSCOhost) was undertaken to identify articles on the topic with the assistance of a subject expert research librarian. The text words contained in the titles and abstracts of relevant articles, and indexed terms used to describe the articles were used to develop a full search strategy (Table 1). The search strategy, including all identified keywords and index terms, were adapted for each database and a second search was conducted between January 2024 and May 2024. Reference lists of articles selected for full-text review were screened for additional articles.

The boundaries of this review were defined by inclusion and exclusion criteria agreed upon by the reviewers during protocol development and applied identically across databases. Studies satisfying inclusion criteria included published, peer-reviewed articles specific to IPECP models used in prelicensure education of dentistry and/or dental hygiene students published in the past 10 years (January 2014 to May 2024) in English. This date filter coincides with the publication of seminal literature related to the topic.<sup>9,10,24</sup>

Table 1. Database search strategy

Search	
1	Dentistry OR dental hygiene
2	(inter-disciplinary OR interdisciplinary ) OR (multi-disciplinary OR multidisciplinary ) OR (interprofessional OR inter-professional ) OR (intra-professional OR intraprofessional ) OR collaborat*
3	"professional identity" OR social*
4	S1 AND S2 AND S3 Limiters: abstract available; 2014-01-01-current; Scholarly (peer reviewed)

Table 2. Inclusion and exclusion criteria

Inclusion	<ul style="list-style-type: none"> <li>• Peer-reviewed journal articles</li> <li>• Published in the past 10 years (2014–present)</li> <li>• English language</li> <li>• IPECP<sup>a</sup> models used in prelicensure education of dentistry and dental hygiene students</li> <li>• IPECP models used in prelicensure education of health professions students that include at minimum one (1) cohort of dentistry or dental hygiene students</li> </ul>
Exclusion	<ul style="list-style-type: none"> <li>• Non-peer reviewed articles, grey literature</li> <li>• &gt;10 years since publication</li> <li>• Language other than English</li> <li>• Studies exploring IPECP models in health professions prelicensure education that do not include a cohort of dentistry or dental hygiene students</li> <li>• Studies exploring IPECP models used amongst practising oral/health professionals</li> <li>• Studies exploring IPECP models from perspective of educators/program administrators/quality assessment or curriculum design</li> </ul>

<sup>a</sup>IPECP: Interprofessional education for collaborative practice

Non-peer reviewed sources such as grey literature, unpublished studies, and commentaries were excluded due to potential risk of reporting bias or conclusion bias in the evidence on IPECP for professional and interprofessional socialization and identity development for oral health students. Studies were limited to those written in English as qualified language interpreters were not readily available and no authors are fluent in languages other than English. Full details of inclusion and exclusion criteria are provided (Table 2).

Studies were deemed eligible for inclusion if they evaluated or explored IPECP experiences in oral health prelicensure education or in prelicensure health education programs broadly, inclusive of at minimum one (1) cohort of dentistry or dental hygiene students. Studies specific to the topic of professional and interprofessional socialization and interprofessional identity development within health professions education and IPECP were included only if a sampling of oral health students was included, to maintain closeness and specificity to the research questions.

### Source of evidence selection

Following the search, all identified records were collated and uploaded into an online article tracking software, Covidence™ (Veritas Health Innovation, Melbourne, Australia, available at [covidence.org](https://www.covidence.org)) and duplicates removed. Following a pilot test, titles and abstracts were screened by 2 independent reviewers (LVD, LDR) for assessment against the inclusion criteria. Sources deemed potentially relevant to the topic of IPECP in oral health education were retrieved in full text and their citation details imported into the software for full-text review by 2 reviewers. Full-text studies that did not satisfy inclusion criteria were excluded. Reasons studies were excluded included wrong population (i.e., no dentistry/dental hygiene students or focused on practising professionals), wrong study design (i.e., pre-program evaluation of students' perceptions of IPC), wrong outcomes assessment (i.e., measuring students' knowledge of health concepts or attainment of technical skills), and those that only described IPECP theory and/or reported on curriculum design. Any disagreements that arose between the 2 reviewers at each stage of the selection process were resolved through discussion until a consensus was reached on eligibility for inclusion. The results of the search are reported in a PRISMA-ScR flow diagram<sup>28</sup> (Figure 1).

### Data extraction

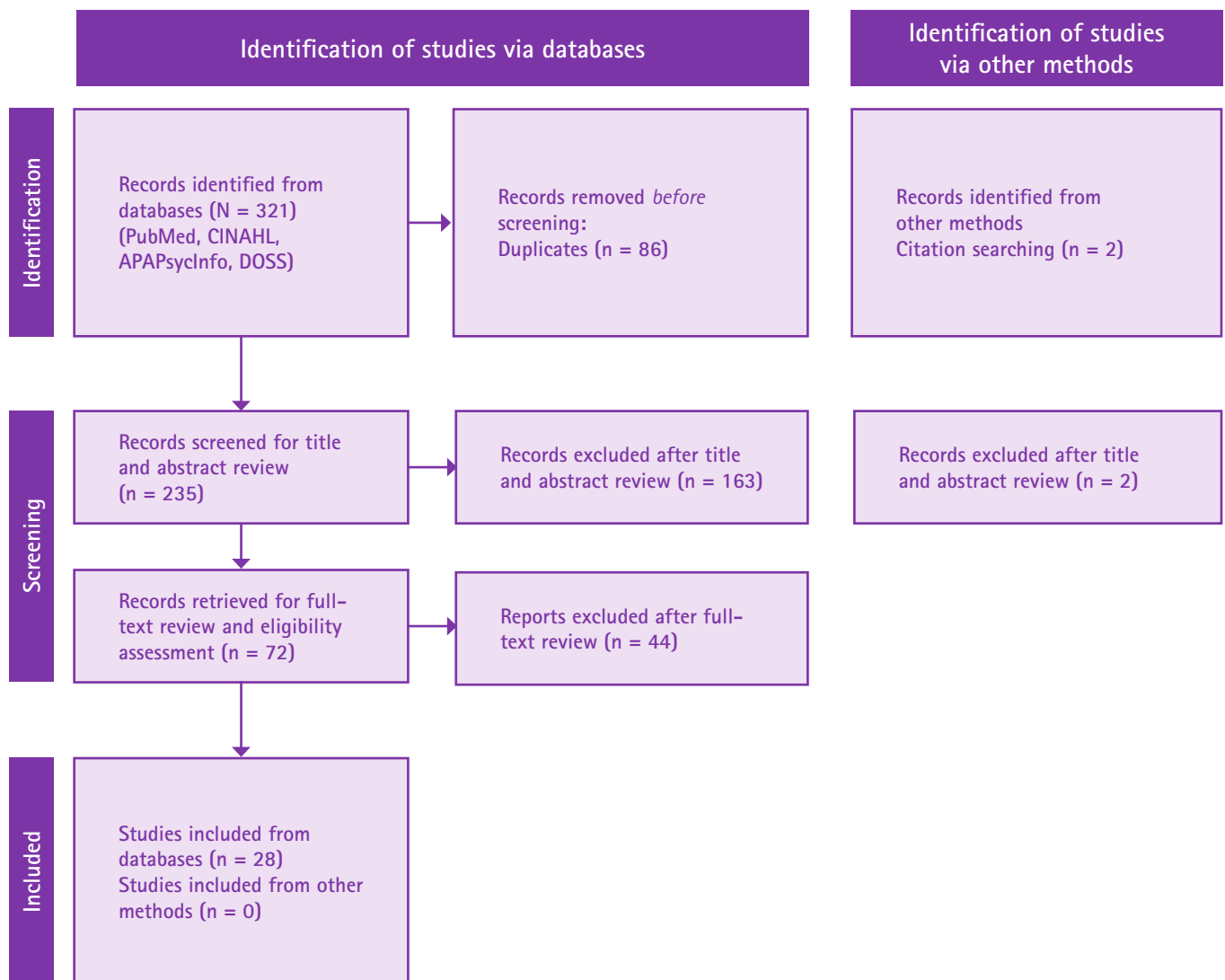
A modified version of the JBI template, source of evidence details, characteristics, and results extraction tool<sup>30</sup> was piloted on a subset of articles deemed eligible for inclusion in the scoping review by a single independent reviewer. Data extracted included specific details about the authors, publication year, country of origin, study aims, participants, IPECP model used, duration of IPECP experience, study design/methods, and key findings or gaps in literature noted relevant to the review questions. All team members were involved in data extraction tool design and piloting and approved appropriateness of the initial design for use in this review. Following piloting and review, data were extracted from all eligible articles and any queries or disagreements that arose during data extraction were discussed and reconciled among the entire team. No authors of papers were required to be contacted. Upon completion of extraction, data from articles included were charted and collated into a tabular format (Supplementary Table S1).

### Data analysis and presentation

Data analysis was initially completed by a single independent reviewer for preliminary identification of IPECP models used in oral health education, characteristics of experiences, and to identify emergent themes informing the research questions. Independent analysis was followed by group discussion among all reviewers of preliminary



Figure 1. Adapted PRISMA-ScR flow chart



Adapted from: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. doi: 10.1136/bmj.n71

findings and to thematically categorize the data. All reviewers were involved in data analysis and confirming themes to substantiate rigour in the data interpretation and presentation of findings. Any disagreements that arose during data analysis and interpretation were resolved through group discussion, until a consensus was reached. The charted results of this review are accompanied by a narrative summary addressing review objective and research questions. The authors also identify and summarize gaps in current IPECP models and curricular programming impeding professional and interprofessional socialization for oral health students.

## RESULTS

### Study inclusion

Database searching identified 321 articles for review. After duplicates were removed (n = 86), 235 articles were

screened by title and abstract; 163 failed to meet inclusion criteria and were excluded. A total of 72 articles were subject to full-text review, of which 28 articles satisfied the inclusion criteria and were aligned with the research questions as agreed upon by the research team (Table 2).

### Characteristics of included sources

Twenty-eight studies conducted in the United States (n = 15), Canada (n = 3), The Netherlands (n = 4), Japan (n = 2), United Kingdom (n = 1), Brazil (n = 1), and Australia (n = 2) published between 2015 and 2023 were included in this review. There were 18 quantitative studies, 6 qualitative studies, and 4 studies were mixed methods (Supplementary Table S1).

Eleven studies included a single cohort of dentistry students, and 4 studies included a single cohort of dental hygiene students within IPECP with other professions. The

remaining 13 studies included both cohorts, with 8 of these studies involving IPECP experiences between oral health students only. Within the studies involving other health professions, a wide array of programs were represented; the most frequent collaborators were students in medicine, nursing, pharmacy, and social work.<sup>7,31–42</sup>

## Review findings

### *IPECP models*

Single and multiformat IPECP models were used across the studies retrieved. The most commonly described IPECP experiences used or included elements of case-based learning/problem-solving activities and collaborative treatment planning exercises.<sup>7,11,31,33,34,36,38–53</sup> Nine studies<sup>7,31,34,35,39,40,48,49,52</sup> explored multimodel IPECP formats utilizing blended student cohorts in classroom-based lectures, forums, and workshops followed by interactive team activities and simulated practice. Three of the studies used or included a virtual IPECP format such as online lecture, group discussion or small-group breakout room activities.<sup>11,36,45</sup> Seven studies featured IPECP experiences that involved exposure to real clinical practice, including observation of practising professionals and direct involvement in clinical patient care and delivery within interprofessional student teams.<sup>32,33,43,51,54–56</sup> Clinical IPECP experiences were described as student led, school-based clinics, and community-based clinical externships (service-learning) under faculty supervision.

The duration of students' participation in IPECP experiences during their prelicensure education varied significantly. The shortest experience was reported as a 3-hour classroom based workshop<sup>49</sup>; the longest experience reported covered a full academic year (2 and a half days per week for 2 terms) in a student-run clinical setting.<sup>55</sup> Five studies did not report details of IPECP duration for students.<sup>33,36–38,50</sup>

### Characteristics of experiences

Key characteristics of IPECP experiences were identified and thematically categorized under 4 major themes: 1) learning from and about others; 2) establishing social connections; 3) authenticity of experiences; and 4) consistent socialization and exposure (Figure 2). The following sections describe these characteristics in relation to the review questions.

#### *Learning from and about others*

Across several studies, opportunities for oral health students to be exposed to blended (multiprofessional) cohort classrooms and activities, and to learn alongside other students were identified as key experiences for facilitating socialization between professions.<sup>7,34,37,40,43,50</sup> Formal socialization within IPECP that included experiences for students to learn from each other—rather than from a lecture or faculty facilitator—was reported as more impactful for students' understanding

of diverse professional roles and scopes.<sup>7,34,37,40,43,50</sup> Small, interprofessional group activities where students could share how they perceive their roles in patient care were reported as highly impactful for students' professional and interprofessional socialization.<sup>7,34,40,42</sup> Further, these activities were directly identified by participants across several studies as enabling the exploration of how diverse professions may collaborate in practice, without the pressure of direct patient care.<sup>34,42</sup>

Students' understanding of interprofessional collaboration was also identified to be enhanced by peer-teaching opportunities within case-study activities and simulation. Otsuka et al.<sup>37</sup> directly explored the impact of a peer-teaching model for interprofessional socialization and collaboration between dental hygiene, dentistry, and medical students. In this study, dental hygiene students taught dentistry and medical students about oral care practices for older adults. Post-IPECP participation, all student cohorts reported a greater understanding and appreciation of each other's professional roles and enhanced understanding of the critical need for collaboration between medical and oral health professionals to provide high-quality patient care.

Several studies identified the importance of learning from peers in IPECP for dismantling professional hierarchies and preconceived biases about other professions.<sup>37–39,48,50</sup> Following IPECP participation in Otsuka et al.'s study,<sup>37</sup> medical and dental students reported an increased valuation of dental hygienists and reported improved perceptions of their professional knowledge, skills, and value as a collaborator/team member. Students across multiple studies<sup>37,43,47,48,56</sup> reported that opportunities to share and demonstrate their professional knowledge to others greatly improved their self-confidence in communicating and collaborating with other professionals. Opportunities for students to share their professional expertise with others through discussion, applied case-study, and simulation experiences were identified as key characteristics of IPECP activities enabling interprofessional socialization and identity development.

#### *Establishing social connections*

Another key characteristic of IPECP experiences for oral health students were social opportunities to connect with peers.<sup>7,11,38,46,47,53,56</sup> Both formal and informal social events were shown to significantly impact how students perceived and experienced collaboration with other professions. Studies identified the formation of connections and friendships as a critical primer for developing collaborative attitudes and behaviours.<sup>7,11,38,46,47,56</sup> IPECP experiences that included “get to know each other” activities and opportunities for students across professions to interact socially (i.e., prior to team-based activities) improved students' preparedness for teamwork.<sup>7,32,38,39,42,46,56</sup> The results of several studies revealed a strong correlation between establishing peer relationships and more positive student perceptions of interprofessional

**Figure 2.** Characteristics of IPECP experiences enabling professional and interprofessional socialization, identity development and preparedness for collaborative practice for oral health students<sup>a</sup>



<sup>a</sup>IPECP: Interprofessional education for collaborative practice

teamwork overall.<sup>7,32,39,42,46,56</sup> In addition, informal social opportunities were identified as key experiences that broke down siloes between professions.<sup>7,42,46,56</sup> Connecting on a peer level before “acting” in their professional role improved students’ motivation to participate in team-based activities and engage in interprofessional clinical practice.<sup>46,54,56</sup>

As an example, Langford et al.<sup>42</sup> studied a classroom-based IPECP workshop involving interprofessional student teams and designated time for new team members to socialize prior to engaging in case-study activities. Post-test scores demonstrated significant improvements in students’ attitudes towards collaboration and perceptions of interprofessional teamwork following IPECP. Asked to report on aspects of the IPECP experience they found most valuable to their learning and preparation for collaborative practice, the majority of students identified socializing with other students and time to connect with their peers. Similar findings were reported by Reinders and Krijen<sup>11</sup> and Reinders et al.<sup>53</sup> who identified the significant contributions of peer connection and social interaction to “intergroup” formation—characterized by behaviours such as increased cohesion and cooperation between students. Establishing social connections was identified across studies as facilitating the development of a positive team culture and as a strong contributor to students’ development of an interprofessional identity.

#### *Authenticity of experiences*

The majority of studies also identified exposure to “authentic” experiences of collaboration as a critical characteristic of IPECP.<sup>7,31,33,34,36,37,39,40,42,45,46,48–50,54–56</sup> Price et al.<sup>7</sup> and Phillips and Keys<sup>31</sup> described the impact of clinical practice observation and rotations through interdisciplinary clinics on students’ abilities to experience interprofessional collaborative practice “in action.” Opportunities to

witness collaboration among diverse professionals in real patient care settings and scenarios improved students’ understanding of professional roles, responsibilities, and how collaboration “in theory” is translated to practice.<sup>7,31</sup> Observational IPECP models enabled students’ exposure to positive role models for collaboration and were shown to be important experiences for learning about and developing behaviours for collaborative practice.<sup>7,31</sup>

In addition to observation, studies identified the importance of hands-on events that provided opportunities for students to be exposed to teamwork and feel “a part of” a team.<sup>7,33,34,36,42,46,48–50,54–56</sup> IPECP models that included treatment planning activities, practice simulation, and patient care were described as authentic experiences of interprofessional socialization and collaborative practice. IPECP experiences that required working together to develop solutions to real clinical problems and patient care challenges enhanced students’ professional and interprofessional skills and confidence working within interprofessional teams.<sup>7,31,37,39,40,42,49,50</sup> Oral health students in several studies reported that after experiencing authentic instances of collaboration (simulation and clinical practice) during IPECP, they could better envision themselves working collaboratively in their future practice and reported a higher motivation to seek out interprofessional opportunities.<sup>31,33–36</sup>

However, studies also established that successful IPECP experiences for oral health students are contingent on the relevance of the experiences to their practice and expertise.<sup>32,38,41,43,51,52</sup> Positive outcomes of IPECP participation for oral health students were significantly influenced by the degree to which clinical case studies and practice scenarios reflected realistic expectations of professional practice and drew upon their professional knowledge and skills.<sup>32,38,41,43,52</sup>

Oral health students in several studies reported that they struggled to see their profession or professional knowledge reflected in the case study activities provided within IPECP alongside other health professions.<sup>32,38,41</sup> Inauthentic and irrelevant practice contexts, settings, and patient care scenarios were major impediments preventing oral health students from contributing to team decision making and collaborative care planning activities within IPECP.<sup>32,38,41,42</sup> Students also reported feeling that their profession was a tokenistic, rather than intentional, add-on to existing IPECP experiences tailored to primary care professions.<sup>32,42</sup> Resultingly, oral health students in these studies placed a lower value on IPECP events overall and the contributions of their participation to their professional development.<sup>32,38,41</sup> Notably, concerns regarding the authenticity and inclusivity of IPECP design were also reported in studies on IPECP between the oral health professions<sup>43,48,52,55</sup> and not isolated to experiences with other health professions.

#### *Consistent socialization and exposure*

Across studies, peer connection was established as a key characteristic of IPECP, facilitating interprofessional socialization and preparing students for IPC. Studies also emphasized the importance of oral health students' having consistent exposure to other health professions cohorts, IPECP, and collaborative experiences during their education to be effectively socialized to interprofessional practice.<sup>32,34,44,46,47,50,53,54,56</sup> Multimodel IPECP programming and experiences beyond a single event or timepoint were identified as key characteristics of prelicensure IPECP that augmented students' development of collaborative skills, attitudes, and behaviours.<sup>11,35,53</sup> In addition, consistent exposure to IPECP and teamwork was reported to enhance students' respect and appreciation for other professions.<sup>34,35,39,46,54</sup> Consistent socialization and exposure to teamworking greatly improved students' recognition of the need for collaborative approaches to patient care and the importance of IPC in practice.<sup>34,35,39,46,54</sup>

IPECP models that used interprofessional student teams across multiple timepoints and activities resulted in higher student preparedness for collaborative interprofessional practice.<sup>34,35,39,48,51,55</sup> Students in Ostroki Olssen's<sup>54</sup> study were assigned to an interprofessional student team providing clinical care in a community-based service-learning model over 4 months. Post-IPECP experience, students across professions reported positively on the IPECP experience for facilitating socialization and mutual understanding of roles and responsibilities. Consistent exposure to other professions also better allowed students to overcome barriers to collaboration and improve their collaborative skills.<sup>34–36,39,54</sup> Repeated opportunities to discuss and resolve differing values and professional opinions as a team improved collaboration and effective team functioning throughout students' interprofessional collaboration experiences.<sup>34,39,54</sup> Frequent socialization and exposure to IPECP was found to positively influence

health professions students' understanding of oral health professionals' roles and contributions to care, and also augment oral health students' self-perception as an interprofessional practitioner.<sup>34</sup>

However, studies also identified barriers to developing a collaborative, interprofessional identity, reporting that oral health curriculum remains largely profession-specific.<sup>31,38,41,44,46,51,54,56</sup> Many studies noted that current oral health curricula provide few opportunities for students to develop and cultivate skills for interprofessional collaboration beyond what may be provided in often time-limited IPECP.<sup>31,38,41,44,46,51,54,56</sup> For studies that involved oral health students in IPECP longitudinally, the majority reported significant improvements in collaborative attitudes, teamwork skills, and behaviours, and a higher preference for IPC in their future practice.<sup>34,44,50</sup> Furthermore, oral health students in the majority of studies reported that their professional development and preparedness for collaborative practice could be enhanced by more consistent IPECP and collaborative experiences throughout their programs.<sup>31,33,40,42–44,46,47,56</sup>

## DISCUSSION

This review identified models and characteristics of IPECP experiences enabling professional and interprofessional socialization and identity development among oral health students. In addition, this review provided important insights into critical elements of IPECP experiences that can best foster a collaborative interprofessional culture between learners and the oral and health professions. Opportunities for socialization and peer connection are identified as critical characteristics of IPECP experiences enhancing oral health students' engagement with other professions and development of collaborative attitudes, values, and behaviours for interprofessional practice.<sup>7,34,37,40,43,50</sup> Moreover, the findings of this review highlight the positive impact of consistent socialization and exposure on interprofessional teamwork during students' prelicensure education. IPECP experiences embedded within the curriculum and threaded throughout students' formal program years best prepare oral health students' with the skills and confidence to be collaborative, interprofessional partners.<sup>34,35,39,46,54</sup> This scoping review also identified that students expressed a desire for additional interprofessional experiences and exposure to IPECP models.<sup>31,33,40,42–44,46,47,56</sup>

These findings are consistent with emerging evidence in the fields of social psychology and professional identity theory showing that frequent social contact between members of different professions serves as a catalyst for dismantling hierarchies and enhancing communication between professionals.<sup>11,53</sup> Consistent socialization builds emotional attachments and can contribute to a sense of psychological safety that enhances individuals' commitment to a team, collaborative behaviours, and supports higher team performance.<sup>11,57,58</sup> Consistent social contact and



exposure to teamwork within IPECP during prelicensure education are critical contributors to interprofessional identity formation and the preparation of oral health students for interprofessional collaboration in practice.

While positive developments in recent years have increased oral health students' exposure to, and involvement in, IPECP programming,<sup>59</sup> this review identified barriers to students' development of an interprofessional identity within existing models. Targeted areas for IPECP development in oral health education include increased collaboration between health programs, directors, and educators to co-create IPECP experiences for students that are professionally inclusive. Review and revision of current IPECP programming to ensure that case studies and team-based activities authentically reflect and intentionally draw upon the professional knowledge of all student participants is another key recommendation from this review.

In addition to more IPECP programming, this review identified a need for oral health programs to re-evaluate the current clinical settings of oral health education.<sup>41,43,46,56</sup> Oral health students across studies cited the clinical setting of their programs as a limiting factor to their interprofessional socialization. Studies also reported on difficulties for oral health students to connect with their team members during IPECP as they seldom saw collaborative attitudes and behaviours role modelled in their education or had exposure to interprofessional teamwork.<sup>41,51,56</sup> These findings highlight a need to evaluate how current clinical training models in oral health education may be reinforcing a hidden curriculum. Hidden curriculum refers to values, morals, and behaviours that are not explicitly taught, but are observed and learned informally through exposure to individuals and settings.<sup>60</sup> Faculty members and professional mentors may be unconsciously reinforcing attitudes and behaviours that counter collaboration. Biased attitudes, and beliefs masked as core professional values, risk becoming engrained as part of students' professional identity during formative years of development.<sup>60,61</sup> Hidden curriculum within oral health education and by extension in IPECP programming risks perpetuating uniprofessional identities and practice culture that directly contend with the intended goals of IPECP: to develop collaborative practitioners and effective interprofessional teams in the future.

### FUTURE RESEARCH AND CONCLUSION

This comprehensive scoping review has identified key models and characteristics of IPECP experiences for oral health students, providing direction for future IPECP development and flagging areas requiring further research. Specifically, there is a need for more qualitative research on the topic to better contextualize the experiences of oral health students within IPECP and identify specific contexts, settings, and scenarios that are most impactful for interprofessional socialization and identity development. In addition, both longitudinal IPECP experiences and longitudinal research that follows students' interprofessional

development throughout their prelicensure education are needed. Longitudinal analyses stand to improve collective understanding of the contributions of IPECP and current learning environments in oral health education to students' readiness for interprofessional collaboration upon entry to practice. This knowledge is crucial to the development and implementation of innovative strategies to enhance IPECP across oral and health education programs so that it better supports IPC and effective care delivery in practice. Research on explicit learning outcomes of IPECP within oral health education is an area of future focus.

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### CONFLICTS OF INTEREST

The authors have declared no conflicts of interest. As a well-published expert in the field of interprofessional education in the health professions and professional/interprofessional socialization, Sheri L Price was not involved in the screening or text review of articles for inclusion in this review.

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