RNAO Registered Nurses' Association of Ontario
L'Association des infirmières et infirmiers autorisés de l'Ontario
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IA BPG INTERNATIONAL AFFAIRS & BEST PRACTICE GUIDELINES

Q1 Evidence Profile

Recommendation Question 1: Should an interprofessional approach to oral care be recommended to improve outcomes for persons, health providers and students?
Population: Adults 18 years of age and older
Intervention: Interprofessional approach to oral care
Comparison: No interprofessional approach to oral care or usual care.
Outcomes: Person's oral health status, frequency of oral care, knowledge and ability of health providers and students to provide oral care, person's experience with oral health
Setting: Health service organizations and academic settings
Bibliography: 97, 106, 170, 564, 582, 923, 1206, 1219, 1471, 2401, 2424

Quality assessment							Study details		No. of participants/events		Summary of Findings	Certainty	References
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Country	Intervention Description	Interprofessional Approach	No Interprofessional Approach	Reported effects/outcomes		
Person's oral health status (assessed with: Validated OHAT, Modified Silness and Loe index to register plaque) (Follow up: 7 days to 6 months)													
2	Quasi-experimental	Serious [a]	Not Serious	Serious [b]	Serious [c]	None	1219 and 1471: Australia	1219: The oral health of patients with and without dysphagia was assessed by an SLP using the OHAT. Nurses then provided oral care, including twice daily brushing and mouth rinsing. 1471: Education about guidelines provided by dental, pharmacist and SLP to medical and nursing staff, including importance of OH, intro of OHAT, how to refer patients. intro of detailed OHAT for nursing staff, stocking of oral health products recommended by guidelines, dev of an oral care treatment and referral process; OHAT contained suggested treatment or action for unhealthy oral health conditions; care escalated to medical and/or dental team when issue difficult to manage	1219: *Baseline*: N (dysphagia) = 12/89 N (no dysphagia)=77/89 *7-day follow-up*: N (dysphagia) = 12/89 N (no dysphagia) = 77/89 *With Dysphagia*: Median OHAT 4 (0-10) at baseline vs. Median OHAT 3 (1-6) at 7-days, *p*=0.024 *Without Dysphagia:* Median OHAT 2(0-8) at baseline vs. Median OHAT 2 (0-9) at 7-days, *p*=.282 1471: N= 73 in pre-intervention group and post-intervention group *Pre-Intervention*: mean total OHAT inc. from baseline to 10-14 days after admission (2.42 -	1219: No comparator 1471: No comparator	Both included studies involved an intervention to increase oral care practice in care settings by care staff. Both studies demonstrated positive trend towards improved oral health care. Study 1219 observed statistical significance in the dysphagic sub-group and non-statistical significance in the non-dysphagic group. Study 1471 observed statistical significance in oral health outcome.	⊕◯◯◯ Very Low	1219: Murray & Scholten (2017) 1471: Luong et al. (2018)

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									2.64, p = 0.33) *Post-intervention*: mean total OHAT decreased from baseline to 10-14 days after admission: 2.81 to 2.29, p < 0.05, 18.5% improvement in OHAT scores				
1	RCT	Very serious [d]	Not serious	Not serious	Serious [e]	None	Eastern and Central Finland	2401: Participants in the intervention group were provided with one of the following education topics that were tailored based on an initial oral exam: oral and written instructions, dental hygiene instructions, denture hygiene instructions, and cleaning of oral mucosa.	2401: *Intervention:* N (baseline)= 151 N (6 mths) = 140 *Intervention:* # of teeth with plaque decreased from 9.5 (+/- 8.9) to 7.8 (+/- 7.2) = % change 1.7	2401: *Control:* N (baseline) = 118 N (6 mths) = 105 *Control:* # of teeth with plaque increased from 9.2 (+/-7.5) to 9.4 (+/-7.6) = % change 0.2	There was a statistically significant reduction in the number of teeth with plaque in the intervention group compared to those in the control group six months after the intervention was implemented. Linear regression: sig reduction in number of teeth with plaque in int. vs. Control (estimate 2.6, 95% CI = 0.3-4.8)	⊕◯◯◯ Very Low	2401: Nihtila et al. (2017)
Frequency of oral care (assessed with: self-reported oral health interview (Follow up: 6 months)													
1	RCT	Very serious [f]	Not serious	Not serious	Serious [g]	None	Eastern and Central Finland	2401: Participants in the intervention group were provided with one of the following education topics that were tailored based on an initial oral exam: oral and written instructions, dental hygiene instructions, denture hygiene instructions, and cleaning of oral mucosa.	2401: *Intervention:* N (baseline)= 151 N (6 mths) = 140 Frequency of twice daily toothbrushing among dentate participants *Intervention Group* Dentate N=87 Baseline: 54 (62.8%) Follow-up: 56 (65.1%) % change: 2.3% inc	2401: *Control:* N (baseline) = 118 N (6 mths) = 105 *Control Group:*	For every 100 people who received an interprofessional approach to oral care, 22 more home care clients aged 75 years or over would receive tooth-brushing at least twice a day (ranges from 3 more to 50).	⊕◯◯◯ Very Low	2401: Nihtila et al. (2017)

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										Dentate N=50 Baseline: 27(54%) Follow-up: 21 (42%) % change: 12% dec			
Knowledge and ability of health providers to provide oral care (assessed with: various questionnaire and surveys) (Follow up: 1 week to 8 month after implementation)													
6	Quasi-experimental	Serious [h]	Not serious	Serious [i]	Serious [j]	None	USA	97: Physician Assistant students received interprofessional education via classroom lecture, clinical skills lab, and dental clinic observations over 3 semesters 106: Medical and dental students received interprofessional curriculum which included: overview of oral anatomy, practical oral examination in a hybrid lecture, group activities to reinforce oral health concepts, problem-based learning tutorial case, intraoral and extraoral exam video 564: Oral health curriculum was integrated into a Clinical Medicine course and a 1-hour lecture was given, followed by 1 hour simulation oral/dental examination skills session. Topics included: roles and interactions of PAs and	97: N=23 - 26% learning improvement between baseline and one week after oral health session. Eight-month retention 14% better than baseline ($p<0.001$). *Clinical skills final examination*: average score of 95% for the 9-items related to oral health *OSCE:* 78% (n=18) students had a correct diagnosis of oral problem 106: N=146 (pre-session) N =145 (post-session) Knowledge related to the causes, prevention and signs of dental caries (Pre: 53% vs. Post: 88%), $p < 0.01$ Knowledge related to	97: No comparator 106: N= 145 564: N=No comparator 582: No comparator 923: N=No comparator 1206: No comparator	Six studies investigated students or health-care provider knowledge in providing oral care. Most of the studies (5 out 6) involved implementing an oral health curriculum which involved interprofessional education for students entering health professions (97, 106, 564, 582, 1206). The other study involved in-service training and live webinars aimed at health-professional continuing education (923). Interprofessional curriculum for students entering health professions Implementation of curricular interventions and in-practice education had a positive effect on confidence in providing oral care (97), oral-systemic health assessment and treatment planning (582, 1206), oral disease identification, and patient education (1206), oral examinations (106, 564, 582) and knowledge of interprofessional roles related to oral care (923). Implementing continuing interprofessional education for medical and dental students had a positive effect on knowledge related to the causes, prevention and signs of dental caries and periodontal disease, importance of oral health screening and competence in conducting an oral examination (106).	⊕⊕◯◯ Low	97: Berkowitz et al. (2017) 106: Park et al. (2016) 564: Berkowitz et al. (2015) 582: Haber et al. (2015) 923: Bonwell et al. (2014) 1206: Markowski et al. (2018)

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								dentists, oral anatomy, abnormal oral findings, oral and extraoral cancer, oral health conditions, the public health burden of oral disease, and prevention of oral diseases, comprehensive intraoral examination. <u>582:</u> NP and NM primary care students completed didactic and clinical simulations. Curriculum topics included: oral health integration into comprehensive history and physical exam; how to develop a risk profile that includes oral and oral-systemic health problems, development of a patient-centered management plan; interprofessional collaboration and referral. <u>923:</u> In-service training: Five 45-minute in-service training sessions for all direct health care providers working at a LTC facility and students of a Certified Nursing Program. Sessions were held over 2 months and each topic was covered by a different health care provider using PowerPoint and/or keynote presentations + demonstrations (periodontist, oral pathologist, pharmacist, dietician, OT).	the causes and prevention of periodontal diseases (Pre: 35% vs. Post: 85%), $p < 0.001$ Importance of oral health screening (Pre: 86% vs. Post. 100%), $p< 0.001$ Competency in conducting an oral examination (Pre: 27% vs. 82%), $p<0.001$ <u>564</u>: N= 25 Baseline score=63% (13); Post-intervention score=88%(9) → improvement of 25% (p <0.001) <u>582:</u> N = 350 98% demonstrated oral health competencies in physical assessment performance examinations; 100% integration of oral health data in patient charts by Pediatric Nurse Practitioner students; 58% of NP and students and providers included oral health exam in their head to toe exam <u>923:</u> N=88 (in-service), N = 57 (1/2 day)				

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								Half-day session: One half-day (4.5hrs) in-person educational seminar/live webinar was offered to direct health care providers not working at the LTC but practicing in the community. Same topics were covered as the 5 in-person training sessions. It also had a panel discussion with a physician, RN, dentist, gerontologist, and pharmacist. <u>1206:</u> The oral health screening (OHS) module was integrated into physiotherapy curricula. Teaching strategies included: lectures, video demonstration, skill practice, Smiles for Life online learning modules, and interprofessional simulation including co-debriefing session with PT and dental professionals.	Pharmacy Session: *Pre*: Mean 45.9 (3.40) [95% CI 39.2, 52.6] *Post*: Mean 73.3 (3.23) [95% CI 67.0, 79.7] (p<0.0001) Pathologist Session: *Pre*: Mean 34.4 (3.13) [95%CI 28.2, 40.5] *Post*: mean 89.0 (3.96) [95%CI 81.2, 96.8] (p<0.0001) Peridontist Session: *Pre*: Mean 51.7 (3.61) [95% CI 44.6, 58.8] *Post*: Mean 65.5 (5.33) [95%CI 55.0, 75.9] (p<0.0001) Occupational therapist session: *Pre*: Mean 72.3 (3.18) [95%CI 66.0, 78.5] *Post*: Mean 76.4 (3.34) [95%CI 69.9, 83.0] (p=0.3412) Dietician session: *Pre*: Mean 67.1 (4.29) [95% CI 58.6, 75.5] *Post*: Mean 98.7 (4.57) [95% CI 89.7, 107.7] (p<0.0001) Half-Day Session: *Pre*: Mean 51.6 (2.41) [95% CI 46.9, 56.4] *Post*: Mean 73.5 (2.64) [95% CI 68.3, 78.7] (p<0.0001)				

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									1206: COHORT 1 N= 80 Correct referral selection by identifying oral health risk factors, providing oral health education and anticipatory guidance: *After simulation experience*: 28/80=25% *After interprofessional debrief*: 68/80=85%				
2	Quasi-experimental (Observational)	Serious [h]	Not serious	Serious [k]	Serious [l]	None	170: Japan 2424: USA	170: Dental hygiene students attended one-hour lecture with videos demonstrating methods of oral health care for LTC older adults. There was then a practical portion where students used simulators to provide oral care. Dental hygiene students then instructed medical and dental students. 2424: Oral health curriculum for physician assistants provided by dental hygienists. Hands on lab exercises and lecture formats used in teaching topics (e.g., oral evaluation, caries prevention, fluoride therapy, oral habits, oral cancer and pathology, tooth development, systemic/oral health relationships).	170: N(med students) = 102 N(dental students)= 52 *Survey item*: "I could understand the methods of oral care for older people requiring long-term care" *med students:* 85.3% strongly agree or agree *dental students:* 75% strongly agree of agree *Survey item*: "I could understand the significances of oral care for older people requiring LTC" *med students*: 88.2% strongly agree or agree *dental students*: 84.6% strongly agree or agree *Survey item*: "I could understand important	170: No comparator 2424: No comparator	Both studies implemented an interprofessional intervention for students before entry to practice. Lectures were used in both studies and hands-on simulation lab exercises. Participants in Otsuka et al. (2016) had a statistically significant increase in understanding the methods of oral care for older adults in long-term care after the educational session was implemented. All dental hygienist and physicians' assistant students agreed that they had a greater ability to identify oral care problems and believed that they could perform oral care screening and oral pain assessment (2424).	⊕◯◯◯ Very Low	170: Otsuka et al. (2016) 2424: Anderson et al. (2013)

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									points of oral care for older people requiring long-term care". *med students*: 79.4% strongly agree or agree *dental students*: 76.9% strongly agree or agree 2424: N= 23 All 23 respondents agreed that they had the ability to ID items, such as risk factors for caries and signs of ginigval disease All respondents also believed they can perform tasks, such as oral screening, or determining the cause of oral pain				
Person's experience with oral health													
0	NA	NA	NA	NA	NA	NA	NA	NA	NA		NA	NA	NA

CI: Confidence interval

Explanations

a. Studies had potential confounding variables with no appropriate analysis method that controlled for these domains. Measurement of outcomes for both studies had a moderate risk of bias due to awareness of outcomes and intervention status with no inter-rater reliability checks. Downgraded by 1 for risk of bias.

b. Population, intervention, and outcome provided direct evidence to the clinical question of interest. However, the population of included patients was very specific (e.g. dementia, cognitive impairments, stroke).. Downgrade by 0.5 for indirectness.

c. The total sample size across both studies was 162 which is below the optimal size of 400 participants and no confidence intervals were included. Downgrade by 1 for imprecision.

d. There was a high risk of bias due to limited information on randomization process, differences in baseline characteristics of randomized participants, interventional personnel awareness of group statuses, and outcome measurement was based on participant recall. Downgraded by 2 for risk of bias.

e. The study sample size was 151 participants which is below the optimal size of 400 participants. No confidence intervals were included. Downgrade by 1 for imprecision.

f. There was a high risk of bias due to concerns regarding randomization of participants based on the fact that significant baseline group differences were found. Additionally, there were some concerns with deviations from the intervention, and measurement of outcomes. Downgraded by 2.

g. There were only 151 participants, which is less than the optimal 400. Downgraded by 1.

h. All studies had potential confounding variables with no appropriate analysis method that controlled for these domains. Furthermore, it was unknown whether there were co-interventions across intervention groups, which is highly likely due to the nature of the curriculums and interprofessional concurrent interventions. Many studies also had a serious risk of bias due to systematic errors in measurement of outcomes due to the use of the same questionnaire and self-report data. Downgraded by 1 for risk of bias.

i. All studies had different health care providers, all were enrolled in different curriculums and educational intervention. All measurement tools (i.e. surveys and questionnaires) were mainly created by the research team and/or not standardized with any psychometric analyses.. Downgraded by 1 for indirectness.

j. Total number of participants was 455 which is above the optimization size, but no confidence intervals were provided with different outcomes measures. Downgrade by 0.5 for imprecision.

k. Population in both studies was different (i.e. physical assistants vs. medical and dental students).. Downgrade by 0.5 for indirectness.

l. The total sample size across both studies was 199 which is below the optimal size of 400 participants and no confidence intervals were included. Downgraded by 1 for imprecision.