

Prospective Study of the Effect of Professional Relationship Between Dental Hygienist and Dentist on Patient Treatment Outcomes in Saudi Arabia

Hannan Saeed Al-Ghamdi¹, Ayman Muslem Almuslem¹,

Fatimah Ahmed Bu-kahmseen¹, Fatimah Mousa Aleid¹,

Sukina Mahdi Karanat¹, Intisar Ahmad Siddiqui^{2*}, Tarek Ezzeldin³

¹Dammam Medical Complex, Dammam Health Network, E1 Cluster, Ministry of Health, Saudi Arabia, ²Department of Dental Education, College of Dentistry, Imam Abdulrahman Bin Faisal University, Saudi Arabia, ³Paediatric Dentistry Saudi Board Medical Program Director, E2 Cluster, Ministry of Health, Saudi Arabia. *Corresponding Author's Email: iasiddiq@iau.edu.sa

Abstract

Successful collaboration and effective communication between dental hygienists and dentists in oral healthcare may lead to optimal treatment outcomes. The study aimed to evaluate the professional relationship between dental hygienists (DHs) and dentists and its impact on the quality of patient care. This prospective study was conducted at the Specialized Dental Center, Dammam Medical Complex Hospital, Saudi Arabia, from November 1, 2023, to September 30, 2024. The survey included various oral health specialists, dental hygienists working closely with them in the public sector, regardless of age, gender, or prior work experience before dental treatment. Three separate surveys were created for dentists and dental hygienists, each containing closed-ended questions on demographics and pre-validated items regarding dentists' and dental hygienists' assessments. Data were analyzed using SPSS version 29. Multivariate principal component analysis was performed to evaluate standard features of the survey results. A total of 95 dentists and 95 dental hygienists participated. A majority of the DH participants (80%–90%) agreed with the DH contributions, practice and management skills, with a sum score index of 4.3 [SD = 1.1] and $\alpha = 0.92$. The mean sum index for the perception of the dentist was 4.2 [SD = 1.1] and the alpha value was 94%. Most dental hygienists responded that DH plays a crucial role in clinical practice, contributions and management. Dentists' views on responsibility and communication with dental hygienists were also found to be equally crucial in dental clinics.

Keywords: Collaboration, Dentist, Dental Hygienist, Oral Healthcare, Relationship, Treatment.

Introduction

A dental hygienist is a licensed healthcare provider who may work in various settings, including private practices, public health, hospitals and long-term care facilities (1). They collaborate with dentists and are part of the dental team, providing patients with services across all dental subspecialties. To achieve the desired outcome of the treatment plan, dentists and dental hygienists must work together, establish strong communication and maintain a healthy, robust relationship focused on the quality of patient service and care (2, 3). Effective communication and collaboration between dental hygienists and dentists are essential for improving treatment quality, patient safety and overall oral health outcomes. Dental hygienists often perform preventive care procedures such as oral assessments, scaling, polishing, patient education and monitoring oral

hygiene status, while dentists diagnose conditions, develop treatment plans and perform restorative or surgical procedures (4). Ongoing communication between both professionals helps ensure that patient findings, risk factors and treatment progress are accurately shared and coordinated (5). Unfortunately, the vital role of dental hygienists in dental care has been overshadowed and not adequately understood, valued, or communicated to dentists, which has harmed the relationship between dental hygienists and dentists. As a result, many hygienists have felt undervalued, left the profession, or sought other careers (5, 6). About 28.6% of dental hygienists felt that their work was not rewarded and 45.2% were dissatisfied with their jobs as dental hygienists (7). However, 52% of Danish dental hygienists work as dentists and 90% of them are happy with their

This is an Open Access article distributed under the terms of the Creative Commons Attribution CC BY license (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted reuse, distribution and reproduction in any medium, provided the original work is properly cited.

(Received 21st March 2026; Accepted 23rd June 2026; Published 20th July 2026)

jobs (6). Strong professional interaction additionally promotes a positive working environment within the dental team. Mutual respect, regular case discussions and collaborative decision-making improve teamwork, reduce workplace stress and increase overall clinical efficiency. Ultimately, effective communication between dental hygienists and dentists contributes to safer dental practice, higher-quality patient-centered care, fewer treatment errors and better overall oral health outcomes (8). This study aimed to emphasize the importance of a clear understanding of dental hygienists' roles within practice. As part of the dental team and especially in maintaining a close professional relationship between dental hygienists and dentists, this will positively influence role division and improve dental treatment outcomes. An American study in Michigan state reported a very positive attitude toward dental hygienists' contributions in the practice role; however, the dentist did not indicate delegating all the legal duties of dental hygienists (9). To pave the way for the inclusion of oral hygiene as a significant part of the overall treatment plan (10, 11).

This study was designed to examine the professional relationship between dental hygienists and dentists and its impact on the quality of patient care. It emphasizes the importance of dentists understanding dental hygienists and recognizing their roles within dental practice.

$$n = \frac{Z_{(1-\alpha/2)}^2 P(1-P)}{d^2}$$

Therefore, a target sample of 185 participants, comprising 100 dental hygienists and 85 dentists, was considered for the study. Because the sample frame for selecting dentists and dental hygienists certified by the Saudi Commission for Health Specialties (SCFHS) was unavailable and due to practical accessibility and operational constraints in reaching the target sample, a non-probability convenience sampling technique was used. Therefore, eligible participants from 28 primary health centers (PHC), one large dental hospital and 72 small private dental facilities who met the predefined inclusion criteria were approached consecutively at their centers during the study period. Recruitment procedures were standardized across centers to reduce inconsistencies in participating centers and to minimize potential

Methodology

This prospective study was conducted at the Specialized Dental Centre, Dammam Medical Complex Hospital, Dammam, Eastern Province of Saudi Arabia, from November 1, 2023, to September 30, 2024. It is a survey-based study, commenced after approval from the Institutional Research Board of Dammam Medical Complex, DMC-IRB No. DEN-15. The study included Saudi national oral health specialists and dental hygienists certified by the Saudi Commission for Health Specialties (SCFHS) who were employed at Ministry of Health Centers in Saudi Arabia and worked closely with them in the public sector, regardless of age, gender, or prior work experience. Participants unwilling to take part or who worked only in dental emergencies were excluded.

Considering the proportion of job satisfaction among dental hygienists [45.2%] and the proportion of dentists' perception [67%] regarding dental hygienists' integrated practice, team environment and required supervision (7, 8). Hence, for dental hygienist ($p = 0.452$) and ($p = 0.67$), on a 10% margin of error " $\alpha = 0.10$ ", 80% power " $1-\beta = 0.80$ " and a 95% confidence interval, the estimated sample sizes, respectively, were 100 dental hygienists and 85 dentists to be recruited for the study, calculated using the Equation number [1].

[1]

selection bias. This approach aimed to include a variety of specialists, such as orthodontists, endodontists, prosthodontists and periodontists, since dental hygienists often work closely with these specialists during dental procedures.

Three separate questionnaires for dentists and dental hygienists were designed, containing closed-ended items including demographic characteristics and pre-validated questions related to the evaluations of dental hygienists and dentists (9). The questionnaires were tailored to the local setup and the study's rationale. The first questionnaire consisted of 13 closed-ended items to be completed by the dentist regarding his/her demographic data, practice characteristics, the number of employed hygienists in the center, approximate patient turnover, the types of services

and the responsibilities of dental hygienists at the center. The second and third questionnaires, comprising 14 and 11 closed-ended items, respectively, measure the perceptions of dental hygienists and dentists regarding the role and relationship between DHs and dentists on a 5-point Likert scale. Based on the average scores, the attitudinal indices, including RDH – Clinical contribution, Contributions to practice, Interactions RDH -Dentist and RDH: Patient management skills, specific to the age, dentist and dental hygienist, were developed for correlation.

The well-structured questionnaires (Google Docs) were sent to dental hygienists and dentists via private links through social media applications and followed up with reminder messages to ensure compliance with the target sample survey. Participant anonymity was maintained by masking personal and organizational identifiers. Confidentiality was protected by restricting access to the collected data to a single administrator only and by reporting findings in aggregate form without revealing individual identities. Data storage security was ensured through password-protected devices, encrypted storage systems and secure institutional servers, preventing unauthorized access or data breaches. Informed consent was obtained electronically prior to participation and participants were briefed on the study's purpose, voluntary participation, confidentiality measures, potential risks and benefits and their right to withdraw at any stage without penalty.

Data were stored and analyzed using SPSS 29.0 (IBM, USA). Descriptive statistics, including frequency distributions of demographic data and survey responses, were calculated and means and standard deviations were determined to provide an overview of the responses. Categorical responses were compared between dental centers and the Primary Health Center (PHC) using chi-square tests of contingency. Multivariate principal component analysis was performed to evaluate the standard features of the survey results related to dental hygienist input and dentists' perceptions

and to identify which specific questions "loaded" onto the same factors. This factor analysis served as the foundation for the study's quantitative structure, as the researchers derived sum-score indices from the PCA results to categorize aspects of dental practice and perception. Bartlett's test was used to test the null hypothesis that the correlation matrix was the identity matrix; rejecting this hypothesis is a prerequisite for PCA to ensure that the variables are sufficiently related. Furthermore, aiming for a Kaiser-Meyer-Olkin (KMO) score > 0.5 would provide statistical justification that the data is adequate for factor extraction, supporting the high internal consistency. Cronbach's alpha coefficients assessed the index's inter-item consistency. Pearson correlation coefficients were calculated to examine the relationship between dental hygienists' contributions and the sum-score indices of their professional behavior. A result was considered statistically significant at $p \leq 0.05$.

Results

The study ended up with an equal number of dentists and dental hygienists (95 each) who gave consent to participate. Among the 95 dentists, 52 were male [54.7%] and 43 were female [45.3%]. The most common age group was 36–45 years (46.3%). The average age of dentists was 37.2 ± 6.8 years, which revealed that they were more likely to participate in the survey if they had better employment experience. Most dentists worked in large cities (69.5%). A significant number of dentists worked in dental centers (45.2%) and primary healthcare centers [40%]. Across settings, most dentists had 1–2 dental hygienists [39%], while the number of dental assistants varied: 42% had 1–2 DAs and 27% had over 20 DAs. A high proportion of hygienists were full-time [93.7%]. The largest share of patients was from middle-income groups [74.7%] and 85.3% were treated either free of charge or with government support, as shown in Table 1.

Table 1: Dentist Demographic Data and Type of Practice

Background characteristics		Total (%)
Gender	Male	52 (54.7)
	Female	43 (45.3)
Age of Dentist	25 – 35 years	39 (41.1)
	36 – 45 years	44 (46.3)
	46 – 55 years	12 (12.6)

Community type	Large city	66 (69.5)
	Moderate city	17 (17.9)
	Rural	3 (3.2)
	Small town	4 (4.2)
	Suburb of a large city	5 (5.3)
Practice type	Primary healthcare	38 (40.0)
	Dental Centre	43 (45.2)
	Solo practice	5 (5.3)
	Academic	3 (3.2)
	Corporate	2 (2.1)
	Owner of private practice	2 (2.1)
	Partnership	2 (2.1)
No. of employed hygienists	Zero	19 (20.0)
	1 – 2	39 (41.0)
	3 – 5	11 (11.6)
	6 – 10	18 (18.9)
	Above 10	8 (8.4)
No. of dental assistants	1 – 2	42 (44.2)
	3 – 5	5 (5.3)
	6 – 10	8 (8.4)
	11 – 20	13 (13.7)
	Above 20	27 (28.4)
Hours per week hygienist	Full time hygienists	89 (93.7)
	Part time	6 (6.3)
Percentage of patients from	Upper income class	4 (4.2)
	Middle income class	71 (74.7)
	Lower income class	20 (21.1)
Primary payment type	Self-pay	3 (3.2)
	Insurance	11 (11.6)
	Free (Government support)	81 (85.3)

A similar number of oral hygienists (i.e., 95) were recruited to evaluate their perceptions of communication between DHs and dentists. There were 47 [49.5%] DHs from dental centers and 48 [50.5%] from primary health centers. According to dental hygienists' perceptions, a statistically significant majority of those in dental centers, compared to primary healthcare centers, provided preventive services, with mean sum scores of 4.34 [± 0.64] versus 4.0 [± 0.84], respectively [$p = 0.029$]. Bartlett's test of sphericity for the preventive services factors was $\chi^2 = 68.5$, $p < 0.001$, $KMO = 0.56$, indicating that the correlation matrix was not an identity matrix and that the data were suitable

for PCA. A significant pattern was observed when comparing the sum scores for diagnostic services, patient behavior modification and pain management; dental hygienists in dental centers scored higher than those in primary healthcare centers, with p -values of 0.026, 0.007 and 0.002, respectively, as presented in Table 2. Bartlett's test of sphericity for the respective factors was $\chi^2 = 178.4$, $p < 0.001$, $KMO = 0.724$, $\chi^2 = 37.7$, $p < 0.001$, $KMO = 0.51$ and $\chi^2 = 42.3$, $p < 0.001$, $KMO = 0.60$, indicating that the correlation matrix was not an identity matrix and that the data were suitable for PCA.

Table 2: Dental Hygienist Services

Dental Hygienist's Services	Total (%)	Dental Centre (Yes)	PHC (Yes)	Contingency Coefficient
Preventive Services				
Dental prophylaxis	89 (93.7)	43 (91.5)	46 (95.8)	0.089
Scaling/root planning	82 (86.3)	47 (100)	35 (72.9)	0.367***
Application of fluoride	89 (93.7)	45 (95.7)	44 (91.7)	0.169
Periodontal maintenance	62 (65.3)	36 (76.6)	26 (54.2)	0.381***
Placing dental sealants	74 (77.9)	33 (70.2)	41 (85.4)	0.180
Preventive services score ¹ (Mean, SD)	4.17 (0.60)	4.34 (0.64)	4.0 (0.84)	$p=0.029^*$

Diagnostic Services

Taking medical/dental history	89 (93.7)	44 (93.6)	45 (93.8)	0.112
Exposure of radiographs	45 (47.4)	28 (59.6)	17 (35.4)	0.260*
Taking patient vitals	42 (44.2)	24 (51.1)	18 (37.5)	0.204
Caries risk assessment	63 (66.3)	33 (70.2)	30 (62.5)	0.134
Oral cancer screening	49 (51.6)	25 (33.2)	24 (50.0)	0.093
Intra oral exam	73 (76.8)	41 (87.2)	32 (66.7)	0.237*
Interpret radiographs	40 (42.1)	25 (53.2)	15 (31.2)	0.020*
Patient Behaviour Modification	4.22 (1.36)	4.48 (1.49)	3.77 (1.56)	p=0.026*
Patient education	93 (97.9)	47 (100)	46 (95.8)	0.144
Nutritional counselling	82 (86.3)	37 (78.7)	45 (93.8)	0.215
Tobacco cessation counselling	73 (76.8)	34 (72.3)	39 (81.2)	0.114
Patient behaviour modification score ¹ (Mean, SD)	2.61 (0.32)	2.51 (0.44)	2.71 (0.24)	p=0.007**

Pain Management

Applying desensitizing agent	53 (55.8)	28 (59.6)	25 (52.1)	0.141
Administer local anaesthesia	33 (34.7)	21 (44.7)	12 (25.0)	0.268**
Administer nitrous oxide	24 (25.0)	13 (27.7)	11 (22.9)	0.188
Pain management score ¹ (Mean, SD)	1.16 (0.47)	1.32 (0.48)	1.0 (0.49)	p=0.002**

Note: *p < 0.05, **p < 0.01, ***p < 0.001. ¹All sum scores were computed by adding 1 point for each "Yes" response. ²A dependent sample t-test found that the two means are significantly different.

A vast majority of dental hygienists' responses supported the vital role of DH in clinical practice [80%], including diagnosis of periodontal disease and explanation of treatment processes and outcomes [87%], diagnosis of oral cancer [63%], diagnosis of clinical caries [76%] and 57% and 59% for the diagnosis of radiographic findings and mucositis, respectively. Additionally, 60% agreed that DH's clinical competence in diagnosing temporomandibular joint dysfunction was high. A

majority of DH participants (80% - 90%) agreed with DH's contributions and with their practice and management skills, with a mean score index of 4.3 [1.1] and $\alpha = 0.92$, as presented in Table 3. Bartlett's test of sphericity for DH's clinical competence and practice management skills was $\chi^2 = 446.7$, $p < 0.001$, KMO = 0.81 and $\chi^2 = 299.0$, $p < 0.001$, KMO = 0.84, indicating that the correlation matrix was not an identity matrix and that the data were suitable for PCA.

Table 3: Importance of Dental Hygienists' Input for Patient Care and Contributions to The Dental Practice

Perceptions of Dental Hygienists	5	4	3	2	1	Mean (SD)
Importance of DH	67%	13%	6%	3%	6%	4.4±1.2
Clinical competence- Importance of DH in:						
Diagnosis of periodontal disease	65%	22%	9%	0%	4%	4.4±1.1
Explanation of treatment process and outcomes	71%	16%	6%	2%	5%	4.4±1.1
Diagnosis of oral cancer	47%	16%	21%	3%	13%	3.8±1.4
Diagnosis of clinical caries	52%	24%	11%	6%	7%	4.1±1.2
Diagnosis of radiographic findings	45%	12%	20%	5%	18%	3.6±1.5
Diagnosis of mucositis	45%	14%	15%	8%	18%	3.6±1.6
Diagnosis of temporomandibular joint dysfunction	38%	22%	17%	7%	16%	3.6±1.5
Clinical competence index (Mean, SD and alpha)						3.9 (1.3) $\alpha = 0.92$
DH Contributions to Practice and Management						
DH is well integrated into practice.	61%	17%	10%	4%	8%	4.2±1.3
DH works well in team environment.	73%	15%	4%	1%	7%	4.4±1.1
DH requires little supervision.	52%	15%	7%	4%	22%	3.7±1.6
DH manages me well.	68%	18%	5%	3%	6%	4.4±1.1
DH is responsible for determining appropriate patient recall.	60%	21%	6%	5%	8%	4.2±1.2
DH is capable of determining appropriate individualized treatment.	65%	17%	8%	5%	5%	4.3±1.2
Value the recommendations of the DH	64%	19%	9%	1%	7%	4.3±1.2
DH benefits business aspect of practice	63%	21%	10%	2%	4%	4.4±1.0

Comfortable speaking with DH where patient care is involved	61%	24%	10%	1%	4%	4.4±1.0
DH can effusively create behaviour change in patients	64%	18%	8%	4%	6%	4.3±1.2
DH establishes good patient relationship.	71%	15%	7%	0%	7%	4.4±1.1
DH manages conflict effectively	66%	18%	9%	1%	6%	4.4±1.1
DH has specialized skill set	66%	17%	10%	3%	4%	4.4±1.1
DH is a lifelong learner	67%	19%	8%	1%	5%	4.4±1.0
DH has effective patient communication skills	71%	15%	7%	25%	5%	4.4±1.1
DH is confident in all aspects of patient care	65%	22%	9%	0%	4%	4.4±1.0
DH Patient management skills	71%	16%	6%	2%	5%	4.4±1.1
Contribution to practice and management index (Mean, SD and alpha)						4.3 (1.1) $\alpha = 0.92$

Note: SD- Standard Deviation.

The group of dentists' perceptions of responsibility and communication with dental hygienists was also considered equally important, as 88% of dentists agreed on the value of DH practice in dental clinics. Additionally, 77% recognized DH benefits for the business aspects of practice, 85% emphasized the importance of comfortable communication between dentists and DHs when patient care is involved and 85% agreed that DHs can effectively induce behaviour change in patients. Furthermore, 82% believed that DHs establish good patient relationships, 72% agreed

that DHs manage conflicts effectively, 72% considered DHs lifelong learners and 82% identified DHs' effective patient communication skills. Also, 76% agreed that DHs are confident in providing inpatient care and 69% perceived that DHs embrace patient management skills. The mean perception index among dentists was 4.2 [SD=1.1], with an alpha value of 94%. Bartlett's test of sphericity for the factors was $\chi^2 = 588.0$, $p < 0.001$, KMO = 0.79, indicating that the correlation matrix was not an identity matrix and that the data were suitable for PCA, as detailed in Table 4.

Table 4: Dentist Responsibilities and Communication with Dental Hygienist

Perceptions of Dentist	5	4	3	2	1	Mean (SD)
Value of the DH practice in dental clinic	72%	16%	8%	2%	2%	4.5±0.9
DH benefits business aspect of practice	58%	19%	17%	3%	3%	4.3±1.0
Comfortable speaking with DH where patient care is involved	61%	21%	14%	1%	3%	4.4±1.0
DH can effusively create behaviour change in patients	56%	29%	10%	1%	4%	4.3±1.0
DH establishes a good patient relationship.	58%	24%	11%	4%	3%	4.3±1.0
DH manages conflict effectively	48%	24%	15%	9%	4%	4.0±1.2
DH is a lifelong learner	51%	21%	14%	7%	7%	4.0±1.3
DH has effective patient communication skills	63%	19%	12%	3%	3%	4.4±1.0
DH is confident in all aspects of patient care	48%	28%	14%	3%	7%	4.1±1.2
DH Patient management skills	45%	24%	24%	1%	6%	4.0±1.2
Perception of dentist index (Mean, SD and alpha)						4.2 (1.1) $\alpha = 0.94$

There was a significant positive correlation between attitudinal indices of clinical contribution, practice contribution, interactions between DH and dentists and patient management skills

[$p < 0.001$]. However, the magnitude of the relationship between attitudinal indices of DH and professional behavior was not statistically significant [$p > 0.05$], as shown in Table 5.

Table 5: Correlations between Attitudinal Indices and Dental Hygienists' Professional Behaviour

Attitudinal Indices	DH -Clinical Contribution	Contributions to Practice	Interactions DH -Dentist	DH Patient Management skills
	Age			
DH -Clinical contribution percentage	1	.617***	.538***	.532***
Contributions to practice	.617***	1	.683***	.687***
Interactions DH -Dentist	.538***	.683***	1	.738***
DH Patient management skills	.532***	.687***	.738***	1

DH – Professional Behaviour

Sum score "Preventive/non-surgical	-.237*	-.085	-.136	-.066
Sum score "Diagnostic procedures"	-.039	-.148	.040	-.026
Sum score "Patient behaviour change."	.002	-.037	-.231*	-.017
Sum score "Pain management."	-.059	-.082	-.111	-.004
Capable of appropriate individualized treatment	.064	.027	-.125	-.145
Effective patient communication skills	.086	-.018	-.121	-.033

Note: *p < 0.05, **p < 0.01, ***p < 0.001.

Discussion

The professional interaction between dental hygienists and dentists is essential to improving patient care and outcomes. This study highlights five key areas where successful collaboration has been shown to improve patient treatment outcomes in the Saudi dental healthcare system.

First, the survey found that the vast majority of dental hygienists [80%] and dentists [88%] recognize the importance of dental hygienists' role in improving clinical practices and patient care outcomes. These results align with earlier studies highlighting the value of teamwork and effective communication among dental professionals in delivering high-quality patient care (9, 12, 13). The strong agreement among dental practitioners in this survey on the importance of dental hygienists' responsibilities reflects a growing recognition of their value, particularly in preventive care and patient management.

Furthermore, the findings of the present study indicate a favorable association between the quality of the dentist-dental hygienist interaction and patient happiness. Dental hygienists' collaborative role in preventive services, such as dental prophylaxis and scaling, has been shown to significantly impact treatment success, with dental centers performing and valuing preventive services more frequently than primary healthcare centers [$p=0.029$]. A larger majority of the DH participants (80%–90%) agreed with the DH contributions, practices and management skills, with a total score index of 4.3 [1.1] and $\alpha = 0.92$. Consistent findings showed non-significant mean differences between dentists and dental hygienists in the level of explanation [-0.80 , $SD = 8.58$] and meeting expectations [-1.24 , $SD = 12.91$], as reported in a Japanese study (14).

To improve access to oral health care in non-traditional settings, stakeholders should be educated about the potential of dental hygienists to practice at the highest level of their license (15).

Previous research has shown that when dental hygienists are allowed to deliver comprehensive services, patient outcomes improve significantly through more holistic dental care practices (2, 10). A recent qualitative study conducted in the Netherlands found that collaborative goals and leadership style are directive, with strong support for task assignment and delegation of responsibilities (16).

Despite these favorable outcomes, the study highlighted ongoing issues, including the perception of dental hygienists as subservient rather than essential collaborative partners. This perception may lead to undervaluation, as data indicate that 28.6% of dental hygienists feel unrecognized in their work, contributing to job dissatisfaction (6, 7, 17). To enhance the quality of medical services and improve dental hygienists' work efficiency, appropriate treatment and compensation systems should be implemented so they can take pride in their professional role.

A similar study found that although dentists generally appreciate the talents of dental hygienists, there remains a reluctance to fully delegate specific duties, which may reflect a lack of trust or confidence within the dental team hierarchy (9). However, the full implementation of effective teamwork in dentistry may be hindered by systemic, regulatory and attitudinal barriers (18). In contrast to the present study's findings, 50.2% of dentists described their collaboration as flexible, while 71.1% of dental hygienists identified task variation as a supportive factor. Dentists rated the quality of care (41.2%) higher than dental hygienists (22.7%), as demonstrated in a systematic review (4).

Addressing these relationship challenges is essential to strengthening the dentist-hygienist partnership. Training and awareness programs can empower dentists to delegate tasks more confidently, resulting in a more equitable division

of labor and improved patient care. Studies show that when professional duties and scope of practice are clear and respected, dental hygienists' job satisfaction and patient outcomes improve (19, 20). As much as technology is infused into the dental practice, such as digital x-rays, 3D printing and CAD/CAM digital impressions, it has played an integral role for dental hygienists, enabling more adapted and integrated care (21).

A recent study concluded that long-term patient satisfaction and trust can be promoted through joint contributions and teamwork between the dentist and dental hygienist. This collaboration may enable easy, comfortable access, periodic hygiene maintenance and dental examinations after completion of dental treatment (22). Significant gaps in patients' perspectives on the dentist and dental hygienist, who serve as neutral third-party stakeholders in collaboration, as well as in their own experiences (14). There is also evidence that good communication supports patient education and motivation, as both professionals reinforce consistent oral health advice and preventive behaviors (23, 24). The average satisfaction scores on a 5-point scale were 4.78 [± 0.71] for the patient's commitment and 4.45 [± 0.62] for the dentist's commitment to continuing the relationship (25). The present study emphasizes lifelong learning and up-to-date knowledge for dental hygienists throughout their professional involvement in patients' treatment planning, counselling, treatment outcomes and patients' willingness to continue with future oral healthcare and aesthetic apprehensions.

Finally, fostering a culture of mutual respect and open communication among dentists and dental hygienists is essential for maximizing the benefits of dental treatment in Saudi Arabia. By more fully integrating dental hygienists' skills into treatment programs, dental centers can move toward a model of comprehensive and preventive dental care that equally values the contributions of all team members.

Conclusion

The conclusion of this study is based on survey results from a sample of 190 dental hygienists and dentists. The vast majority of dental hygienists' responses supported the vital role of DH in clinical practice. A larger majority of DH participants [80%–90%] agreed with DH's contributions, practice and management skills.

Dentists' perceptions of their responsibilities and communication with dental hygienists were identified as equally important. Dentists agreed [70% - 85%] on the value of the DH practice in dental clinics, its benefits to the business aspect of the practice, the importance of comfortable communication with DH in patient care, effectively promoting behavior change in patients, establishing a good patient relationship, managing conflicts effectively, being lifelong learners, possessing practical patient communication skills and feeling confident about patient care.

There was a limitation related to the specialist-based cluster sampling that prevented evaluating perceptions specific to each specialty, such as prosthetics and implant surgery. The importance of laboratory technicians relative to dental hygienists during treatment is considered highly significant. The study was limited to a specific geographic location and its reliance on self-reported perceptions was influenced by cultural constraints and hierarchical conflicts. The patient's outcome measurement, which contributed to team efforts by DHs and dentists, was also based on the dentist's perception rather than the patient's perspective.

For future work, this study could be expanded by increasing the sample size across various geographical locations to include medical staff from other areas, adding dental staff, such as dental assistants and including patients who receive the service. This study highlights the collaboration between dentists and dental hygienists in the initial preparation of patients for oral healthcare and the development of comprehensive treatment plans. Better collaboration between dentists and hygienists results in improved treatment outcomes, suggesting that clinics should promote clear role definitions and mutual respect among team members. A policy framework and collaborative protocols can be established in dental institutions and private practices to incorporate both dentist and hygienist contributions into patient care programs.

Abbreviations

DA: Dental assistant, DH: Dental hygienist, PHC: Primary Health Center, SCFHS: Saudi Commission for Health Specialties, SD: Standard deviation.

Acknowledgement

We acknowledge the administrative and support staff for their assistance with data collection and the maintenance of survey responses.

Author Contributions

Hannan Saeed Al-Ghamdi: Planning and Preparation of Study, Literature Search, Writing the Research Proposal, Review of Questionnaire Contents, Supervision of Survey Administration, Data Validation, Collection of Data, Writing and Review of Manuscript, Ayman Muslem Almuslem: Planning and Preparation of Study, Writing the Research Proposal, Process of IRB Application, Supervision of Survey Administration, Data Validation, Data Collection, Writing, Review of Manuscript, Fatimah Ahmed Bu-kahmseen: Writing the Research Proposal, Design of e-survey in Google Forms, Survey Administration, Data Validation, Data Collection, Writing, Review, Fatimah Mousa Aleid: Literature Search, Maintaining Survey Responses in Google Forms, Follow-Up With Survey Participants, Data Validation, Data Collection, Writing and Review of Manuscript, Sukina Mahdi Karanat: Survey Administration, Data Validation, Data Collection, Preparing an Excel Worksheet to Maintain Survey Data, Writing, Review of Manuscript. Intisar Ahmad Siddiqui: Supervision, Questionnaire Preparation and Validation, Data Coding, Statistical Analysis, Writing, Review of the Manuscript, Tarek Ezzeldin: Conceptualization, Supervision, Data Validation, Bibliographic Arrangement, Writing, Review of Manuscript.

Conflict of Interest

There is no conflict of interest of any author included in the study.

Data Availability

The live data of questionnaire-based survey responses in an Excel worksheet are available, which can be provided to the journal as per the requirement (if needed).

Declaration of Artificial Intelligence (AI) Assistance

It is declared that the manuscript is an original write-up; no AI tools were used during the review of the literature, methodology, results, tabulation, discussion and reference citations. The authors

take full responsibility for the content's originality, interpretation and accuracy.

Ethics Approval

Ethical approval prior to the commencement of the study, as mandatory for the involvement and consent of the human participants, was obtained from the Institutional Research Board, Dammam Medical Complex, DMC-IRB No. DEN-15.

Funding

There is no funding source for this study.

References

1. College of Dental Hygienists of Ontario. What is a dental hygienist? Toronto: College of Dental Hygienists of Ontario; 2021.
https://cdho.org/discover/?utm_source=chatgpt.com
2. Ghoneim A, Patel K. Healthy and respectful workplaces. JDR Clin Trans Res. 2022.
doi:10.1177/23800844211001827
3. Harris RM, Burnside G. The role of dental therapists working in four personal dental service pilots: type of patients seen, work undertaken and cost-effectiveness within the context of the dental practice. Br Dent J. 2004;197(8):491-6.
doi: 10.1038/sj.bdj.4811749
4. Reinders JJ, Krijnen WP, Onclin P, van der Schans CP, Stegenga B. Attitudes among dentists and dental hygienists towards extended scope and independent practice of dental hygienists. Int Dent J. 2017;67(1):46-58.
doi:10.1111/idj.12254
5. Hoste N, De Vleeschauwer A, Baele E, Mertens F, Poppe L, Janssens B, Pype P. Interprofessional collaboration in dentistry and dental hygiene: a qualitative study. J Interprof Care. 2017;31(5):624-32.
doi: 10.21203/rs.3.rs-8396075/v1
6. Hach M, Aaberg K, Lempert SM, Danielsen B. Work assignments, delegation of tasks and job satisfaction among Danish dental hygienists. Int J Dent Hyg. 2016;15(3):229-35.
doi: 10.1111/idh.12203
7. Okada A, Ohara Y, Yamamoto Y, Nomura Y, Hosoya N, Hanada N, Takei N. Impact of working environment on job satisfaction: findings from a survey of Japanese dental hygienists. Int J Environ Res Public Health. 2021;18(6):3200.
doi:10.3390/ijerph18063200
8. Saito A, Koike H. Patient satisfaction and clinical outcomes in team-based vs. solo dental practices in Japan. BMC Health Serv Res. 2021;21(1):70.
doi:10.1186/s12913-021-06693-2
9. Mishler SK, Inglehart MR, McComas MJ, Murdoch-Kinch CA, Kinney JS. General dentists' perceptions of dental hygienists' professional role: a survey. J Dent Hyg. 2018;92(1):30-9.
<https://pubmed.ncbi.nlm.nih.gov/29500283>
10. Hakanen J, Schaufeli WB, Ahola K. The job demands-resources model: a three-year cross-lagged study of

- burnout, depression, commitment and work engagement. *Work Stress*. 2008;22(3):224-41. doi:10.1080/02678370802379432
11. Godson J, Williams S, Csikar J, Bradley S, Rowbotham JS. Dental therapy in the United Kingdom: part 2. A survey of reported working practices. *Br Dent J*. 2009;207(9):417-23. doi: 10.1038/sj.bdj.2009.962.
 12. Stenman J, Wennström JL, Abrahamsson KH. Dental hygienists' views on communicative factors and interpersonal processes in prevention and treatment of periodontal disease. *Int J Dent Hyg*. 2011;8(3):213-8. doi:10.1111/j.1601-5037.2010.00459.x
 13. Susuga M, Takahashi Y, Iguchi A, Motoi S, Hasegawa Y. Utilising text mining to determine Japanese dental hygiene students' perceptions of dental hygienists and dentists. *Int J Dent Hyg*. 2024. doi:10.1111/idh.12865
 14. Hamasaki T, Kato H, Kumagai T, Hagihara A. Association between dentist-dental hygienist communication and dental treatment outcomes. *Health Commun*. 2017;32(3):288-97. doi:10.1080/10410236.2016.1138376
 15. Ahern J. Advancing oral health equity through medical-dental integration: dental hygienists as catalysts for change in an evolving health care system. *J Dent Hyg*. 2024;98(3):8-12. <https://jdh.adha.org/content/98/3/8>
 16. De Boer JC, van Dam BA, van der Sanden WJ, Bruers JJ. Collaboration between general dental practitioners and dental hygienists: a qualitative study. *BMC Health Serv Res*. 2022;22(1):501. doi: 10.1186/s12913-022-07933-3
 17. Kim M, Kim H, Lim C. Effects of dental hygienists' job stress on somatization in an area. *J Korean Soc Dent Hyg Sci*. 2020;20(1):59-66. doi:10.17135/jdhs.2020.20.1.59
 18. Preshaw PM, Minnery H, Dunn I, Bissett SM. Teamworking in dentistry: the importance for dentists, dental hygienists and dental therapists to work effectively together—a narrative review. *Int J Dent Hyg*. 2024. doi: 10.1111/idh.12874
 19. Reinders JJ, Krijnen WP, Jerković-Ćosić K, Lycklama Å Nijeholt M, van Offenbeek MA, Stegenga B, van der Schans CP. Reasons that Dutch dentists and dental hygienists oppose or support an extended scope of practice for dental hygienists. *J Allied Health*. 2018;47(4):255-64. <https://pubmed.ncbi.nlm.nih.gov/30508836/>
 20. Nakayama R, Soga Y, Fujii S, Tsukuda K, Kadoya S, Takahashi K, Saga R, Nishimura M, Yokoyama N, Okita A. Expanding on the professional role of dental hygienists as key managers of medical-dental and hospital-dental clinic collaboration in a local Japanese hospital without a dentistry department. *Int J Dent Hyg*. 2023;21(3):533-40. doi: 10.1111/idh.12684
 21. Alhemaaidani MF, Alhemaaidani FF, Almutiri HB, Al Amry ARS, Almoughiri MM, Al-Alawi HR, Alotaibi MA, Al Bisher AS. The role of dental hygienists in promoting oral and dental health within the framework of multidisciplinary health care and modern digital technologies. *J Int Crisis Risk Commun Res*. 2024;7(S9):969-75. doi:10.63278/jicrcr.vi.591
 22. Albakry IM, Notto SB, Alandanusi JN, Alzahrani HG, Flimban AA, Almodahi ANA, et al. The vital partnership: dentists and hygienists working together for oral health: a new appraisal. *J Namib Stud*. 2023; 38:1730-7. doi:10.59670/bpgw4x87
 23. Kersbergen M, Creugers NHJ, Hollaar VRY, Laurant MGH. Perceptions of interprofessional collaboration in education of dentists and dental hygienists and the impact on dental practice in the Netherlands: a qualitative study. *Eur J Dent Educ*. 2020;24(1):145-53. doi:10.1111/eje.12478
 24. Ho JCY, Chai HH, Lo ECM, Huang MZ, Chu CH. Strategies for effective dentist-patient communication: a literature review. *Patient Prefer Adherence*. 2024; 18:1385-94. doi:10.2147/PPA.S465221
 25. Szabó RM, Buzás N, Braunitzer G, Shedlin MG, Má A. Factors influencing patient satisfaction and loyalty as perceived by dentists and their patients. *Dentistry J*. 2023;11(9):203. doi:10.3390/dj11090203

How to Cite: Al-Ghamdi HS, Almuslem AM, Bu-kahmseen FA, Aleid FM, Karanat SM, Siddiqui IA, Ezzeldin T. Prospective Study of the Effect of Professional Relationship Between Dental Hygienist and Dentist on Patient Treatment Outcomes in Saudi Arabia. *Int Res J Multidiscip Scope*. 2026;7(3):1178-1187. DOI: 10.47857/irjms.2026.v07i03.011315