

# Stakeholder Perception of the Professional Role and Competence of Swedish Dental Hygienists: A Questionnaire and Interview Study

Jonas Erdenborg, Sebastian Malmqvist, Nadja Bjurshammar, Gunnar Johannsen, Margareta Hultin, Annsofi Johannsen

Department of Dental Medicine, Karolinska Institutet, Huddinge, Sweden

**ABSTRACT** **Objectives:** This study investigated stakeholder opinions on the competence and role of dental hygienists in Sweden. **Materials and Methods:** A questionnaire was sent by e-mail to 94 stakeholders in eight Swedish counties. The survey queried the competence of recently graduated dental hygienists in skills in collaboration, communication, and problem-solving, and in clinical skills. In addition, 10 stakeholders from different Swedish dental organizations agreed to one-on-one deep interviews. Open-ended questions focused on dental hygienist competence to perform dental hygienist skills and tasks and to collaborate with other dental professionals and health-care professionals. Further topics concerning the dental hygienist included their future role and working in other European countries. The interviews were transcribed and then coded using qualitative conventional content analysis methods. **Results:** The stakeholder consensus in both the questionnaires and the interviews was that the dental hygienist profession is essential to modern dental care. The professional knowledge possessed by dental hygienists is unique and their role has developed and broadened over the years. Furthermore, the qualitative content analysis of the deep interviews identified a core category: The dental hygienist is an important profession for good oral health. **Conclusion:** Dental hygienists, responsible for prevention and oral health promotion, are an important members of the modern dental team. The need for dental hygienists to collaborate with other dental and general health-care professionals to meet the future demands of society will increase.

**KEYWORDS:** Dental hygienist, education, interviews, oral health, qualitative study, questionnaire

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## INTRODUCTION

In 1968, the DH profession was introduced in Sweden and since then the profession has developed and changed. Today the DH has more responsibilities and also its own license. No previous studies has been performed to investigate how DHs can meet the new demands from society, thus the present study is important. Oral health is closely related to general health in society, lifestyle, and quality of life.<sup>[1]</sup> Thus, one of the primary roles of the dental hygienist (DH) profession comprises preventive measures for promoting the general health and well-being of the patient. Although variation between countries is

considerable, overall, the number of DHs has risen worldwide.<sup>[2]</sup> In many European countries, DHs are educated to work independently in the private and public sectors including hospitals and permanent dental care facilities.<sup>[3]</sup> In the public sector, oral health-care personnel predominantly treat children and

**Address for correspondence:** Dr. Annsofi Johannsen, Department of Dental Medicine, Karolinska Institutet, Alfred Nobels Allé 8, Huddinge 141 04, Sweden. E-mail: Annsofi.Johannsen@ki.se

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adolescents, but a growing number of DHs are serving adults and the elderly in institutional care.<sup>[4]</sup>

As such, DHs are valuable oral health professionals, expanding their areas of activities in several countries in Europe and abroad.<sup>[5]</sup> One study speculating on the future of the DH workforce believes that by 2040, more DHs will be practicing in multidisciplinary health settings than in the traditional dental clinic.<sup>[6]</sup> Thus, DHs need other types of knowledge and skills and should be prepared to work in interprofessional health teams. DHs will serve as primary oral health-care providers, including promotion of oral health education, prevention, and awareness, which may result in more cost-effective oral care.

Stakeholder perceptions of the role of DHs are important sources of information as the profession has not been certified in all member states of the European Union (EU). Studies have observed that higher cooperation between the various public authorities, universities, and DH associations is needed to clearly define the role of the DH profession in a way that would allow certification throughout Europe.<sup>[3]</sup> Several studies have shown that the need for self-care instruction and motivation is great for patients to achieve and maintain good oral health.<sup>[7,8]</sup>

Since 1991, Swedish DHs can work independently after a license from the National Board of Health and Welfare.<sup>[9]</sup> A DH can work in public dental care, private dental offices as employees, or run their own business. One comparative study reported that DHs in Sweden and Portugal worked with similar tasks; differences in legislations, such as administering local anesthetic, which Sweden allows, explain the few discrepancies.<sup>[10]</sup> Little is known about how DH education is evolving to meet the changing needs of working life. So it is also important to get information from stakeholders in dentistry that will ensure that university education is evolving at the same pace as the profession. Legislator and stakeholder perceptions and opinions of the DH profession and of dentistry in general are important for DH programs as well as for actively working DHs. In 1968, the DH profession was introduced in Sweden and since then, the profession has developed and changed. Today, the DH profession has more responsibilities and also its own license. No previous studies have been performed to investigate how DHs can meet the new demands from society, thus this study is important.

Thus, the aim of this study was to investigate stakeholder perceptions of the competence and role of Swedish DHs.

## MATERIALS AND METHODS

### STUDY DESIGN AND PARTICIPANTS

This study used a self-report questionnaire and one-on-one structured deep interviews to collect quantitative and qualitative data. In 2017, 94 stakeholders in eight counties in the central part of Sweden were asked to participate in an alumni survey from Karolinska Institute (KI). The stakeholders were chosen based on a convenience sample from these counties and the reason for that was that the DHs who are newly graduated from KI often seek employment in these regions. They received a questionnaire regarding the skills and education of recently graduated DHs through e-mail.<sup>[11]</sup> Both public and private dental clinics in each county were selected.

We conducted 10 deep interviews with stakeholders from various dental organizations in central and northern Sweden. Interviewees were selected from larger clinics with more employees and also from clinics with fewer employees to include stakeholders at all employment levels. Two authors (AJ, JE) contacted the chosen stakeholders by e-mail and phone to inform them about the project, the purpose of the interviews, and to ask if they would be willing to participate. All 10 stakeholders (five women and five men) who were contacted agreed to participate in the deep interviews.

Four stakeholders had broad responsibility for the dental care at the county council level, of which one stakeholder was employed at a national authority and worked with issues and guidelines in dental care, four stakeholders managed clinics with more than 30 employees, and one stakeholder was employed at a clinic with fewer than 10 employees. One stakeholder also had experience of union work in dental issues.

### QUESTIONNAIRE

The items were adapted from the 2016 KI Alumni Survey.<sup>[11]</sup> The questionnaire included items on organization, number of employees at the clinic, their experience of DH competence; expected skills regarding the ability to collaborate, communicate, work independently, and solve problems; and practical clinical skills. Other questions included if the DH could identify needs for further knowledge, what knowledge the stakeholders had about the program structure, and if they wished to collaborate with the university, how they wished to do so. The final item asked whether the stakeholder had any advice for meeting the demands for future knowledge and the needs of society. The survey was open and voluntary, and took place between April 2017-June 2017.

**STATISTICAL ANALYSIS**

The questionnaire data were analyzed using the Predictive Analytics Software (PASW) Statistics, version 18.0 (PASW, Chicago, Illinois). Descriptive statistical methods present the data in percentages and numbers.

**INTERVIEWS AND PROCEDURE**

The authors, who had no care-providing relations with the stakeholders, conducted the interviews individually at a location chosen by the informant. The interviews were 35–45 min long. The participants were informed that their involvement would be anonymous and that the collected material would remain confidential. All interviews were recorded on tape between August 2017 and April 2018, and then transcribed.

An interview guide was developed based on an earlier study on the professional role of DHs.<sup>[12]</sup> Our guide used open-ended questions, which focused on DH competence, skills, tasks, and collaboration with the program and with other dental professionals and health-care professionals; the role of the DH in the future; and the ability of DHs to work in other EU countries.

The two authors conducted one interview each and then discussed together the thematic areas that should be the focus of the following interviews. Eight other interviews followed, where the last four were carried out to validate that no additional content was generated, that is, that saturation had been achieved.

**DATA ANALYSIS**

Two of the authors (AJ and JE) then read the transcriptions, writing codes in the text margins that briefly captured the essence of the content. After the first reading, the two authors grouped the codes into preliminary subcategories independently, with a focus on the study aim. The research group then discussed the choice of codes until consensus was reached.

Coding was carried out according to qualitative conventional content analysis, which included analysis of both manifest and latent content and interpretation of the text material with depth and level of abstraction.<sup>[13]</sup> Visible, evident components identified manifest content, and latent content clarified the deeper underlying meaning of the text. Conventional content analysis derives the coding categories directly from the text data, which is a process of inductive category development.

**RESULTS**

**QUESTIONNAIRE**

The response rate was 54% (*n* = 45); most of the responders, 91% (*n* = 41), worked in public dental care, 2% (*n* = 1) in a municipal organization, and 7% (*n* = 3) in other private dental care organizations. All clinics (*n* = 41) had between 10 and 49 employees.

Table 1 shows how the stakeholders assessed different aspects of DH competence and the DH profession. In their eyes, the DHs had good theoretical and scientific knowledge, knowledge about behavior, communication skills (67%), and collaboration skills (66%). On the contrary, 60% of the stakeholders reported that the DHs needed more practical skills, more experience in oral radiology, and greater competence in viewing patients and their treatment needs from a holistic perspective. The stakeholders stated that DHs needed more knowledge and experience in the following areas: general practical training, working with children and youth, and prosthetic dentistry as well as understanding and practicing team-based dentistry.

**INTERVIEWS**

The deep interviews explored the views of 10 stakeholders on the competence level and the role

**Table 1: Stakeholder perception of the competence of recently graduated dental hygienists**

Items	Low degree <i>N</i> (%)	Partly <i>N</i> (%)	High degree <i>N</i> (%)	Don't know <i>N</i> (%)	Mean (SD)
Do DH graduates possess general competence for performing their work?	–	20 (47)	16 (37)	7 (16)	3.4 (0.5)
How well do DH graduates meet the following work skills:					
Collaboration	1 (2)	8 (20)	27 (66)	5 (12)	4.0 (0.8)
Critical thinking	3 (7)	15 (36)	18 (43)	6 (14)	3.5 (0.8)
Communication skills	1 (2)	8 (19)	28 (67)	5 (12)	3.9 (0.7)
Work independently	8 (20)	13 (32)	15 (36)	5 (12)	3.2 (1.0)
Retrieve and evaluate information	3 (7)	15 (36)	17 (40)	7 (17)	3.4 (0.8)
Problem solving	2 (5)	18 (45)	13 (33)	7 (17)	3.4 (0.7)
Practical skills	6 (14)	20 (48)	11 (26)	5 (12)	3.2 (0.8)
To what extent are DH graduates able to identify their need for additional knowledge?	3 (7)	9 (22)	21 (50)	9 (21)	3.7 (0.8)

DH = dental hygienist, SD = standard deviation

in society of DHs now and in the future. During data analysis, we developed themes, categories, and subcategories [Table 2]. Interview quotes show the various subcategories.

**COMPETENCE**

This category illustrated the reflections of the informants on the profession and what it entails as well as what they, in managerial positions, expect from a DH. Topics included the strengths and weaknesses of the profession as well as the potential widening of competence in the future. The competence category comprises three subcategories: the profession, education, and further development [Table 3].

**PROFESSION**

While discussing competence and what the employers expect from a DH, in addition to the prophylactic

work, topics such as caries and periodontal and oral examinations were mentioned. Many of the informants thought that what was needed more from recently graduated DHs was a holistic view of the status and individual needs of the patient, and also a better general dental knowledge at the start of their professional career.

**EDUCATION**

The informants questioned the level of education in some areas. Newly qualified DHs do not always have sufficiently profound knowledge in certain key areas when they start their employments. Most informants wished for improvements concerning quality and knowledge of, for example, taking intraoral radiographs. Another aspect that emerged during the interviews was the desire for more vocational training. This could help anchor classroom theoretical knowledge as well as be

**Table 2: Stakeholders’ perception of the dental hygienist profession and competence of dental hygienists**

Theme	Categories	Subcategories
Dental hygienist is an important profession for achieving and maintaining good oral health	Competence	The profession Education Further development
	Long-term societal needs	Collaboration–team work Job market–recruitment Future challenges

**Table 3: The category, competency, with subcategories and quotations regarding the stakeholders’ perception of the dental hygienist profession**

Subcategory	Competency Quotations
The profession	<p>“In certain areas, the dental hygienist serves as our expert, primarily with all the important preventive works but also working with our healthy patients. In terms of health promotional work with behavioral impact, they are the most skilled of our employees. They are extremely important ... yes, a very important group at our clinics.” (I 2, I 6)</p> <p>“On the other hand, I have noticed a weakness in general dental competence. If someone has a deep gingival pocket, they think it is due to periodontitis ... but there are some alternative diagnoses. A more comprehensive overall picture is required when it comes to dentistry.” (I 4)</p>
Education	<p>“We have a number of compulsory education programs that familiarize students with the general dental care way of working, where X-ray training plays an important part of recognizing what one sees on an X-ray.” (I 2)</p> <p>“More vocational training. Add more weeks of this during the education to see what is expected when you start to work.” (I 8)</p> <p>“Educationally, I think it would be very good to train a bit at a general or specialist clinic for a while. Some programs have tried this with great success I believe.” (I 9)</p>
Further development	<p>“With the recent graduates, there’s definitely a desire to stay up to date, subscribe to articles, meet and discuss with colleagues with longer experience.” (I 6)</p> <p>“I wish there were compulsory postgraduate credits that you could obtain in different ways. It could include reading a certain number of articles, and auditing or enrolling as a student in courses. I reckon, any documented further education would be really interesting.” (I 10)</p> <p>“I think it would be an incredible advantage if you included more cariology in the education and if it was part of the dental hygienist’s qualifications. That would be great. Then we could structure our work in a completely different way.” (I 2)</p> <p>“I have no doubt they would be able to perform the task. I think the dental hygienist’s finesse is that they are not allowed to drill but must solve the patient’s disease in other ways.” (I 7)</p>



an opportunity to observe and practice the profession under supervision.

**FURTHER DEVELOPMENT**

Most of the informants had experience of how DHs often immerse themselves in their work and try to keep their knowledge up to date by reading articles or attending different courses. Questions about different types of postgraduate studies were raised, where several informants felt it would be beneficial to the profession if there were set structures around this.

Discussions on including restorative dental treatment in the profession have been ongoing for several years. Most informants, however, considered that restorative treatment should not be part of the dental hygiene focus.

**LONG-TERM SOCIETAL NEEDS**

This category describes the thoughts and reflections of the informants on the future needs of society for DHs in Sweden. Discussions circled around supply and demand, and what the future of the profession will require concerning the various patient groups that the DH will encounter and new ways in how the DH must work. The long-term societal needs category comprises three subcategories: collaboration-team work, job market-recruitment, and future challenges [Table 4].

**COLLABORATION-TEAMWORK**

The informants described the DH profession that they have traditionally performed their tasks alone in their rooms. In line with the development of society

and changed patient groups, these traditions are also changing. In some regions of Sweden, DHs have more interprofessional collaboration with other health-care providers, for example, with health promotion among children, adolescents and young adults, and the elderly population.

**JOB MARKET-RECRUITMENT**

The informants considered the long-term societal needs of DHs to be great, and a majority believed that it will continue to increase. They also considered that the increasing need for DHs, coupled with the current shortage of DHs and the reduction in education sites, was worrying.

**FUTURE CHALLENGES**

Most informants mentioned that because society constantly changes, there will always be new challenges in dental care. One group, the informants mentioned, was the elderly patients, who are both increasing in numbers and keeping their teeth longer; this group will constitute an important future patient group for DHs. Another group that several informants mentioned comprised the newly arrived immigrants to our country. They will contribute to a growing demand for dental care in the future.

**DISCUSSION**

The stakeholder consensus in both the questionnaires and the interviews was that the DH profession is an essential part of modern dental care. The professional knowledge that DHs possess is unique, and their role has

**Table 4: The category, long-term societal needs, with subcategories and quotations regarding the stakeholders' perception of the dental hygienist profession.**

Subcategory	Long-term societal needs
	Quotations
Collaboration-teamwork	<p>“We start early, when the children are about 8–9 months old, with targeted parenting support in cooperation with both child health and family centers, then we cooperate among others with the various health teams available in the county, and of course, with school staff. Among our elderly, we collaborate with the care staff, nurses, dieticians, and nutritionists.” (I 5)</p> <p>“Our new colleagues have drive and want to work in teams, and sometimes it awakens something in those who traditionally did not want to do it. It’s an exciting development.” (I 6)</p>
Job market-recruitment	<p>“In the future, it is likely that there will be more DHs than dentists. Some patients may only need dental hygiene treatment and it is also cheaper to hire dental hygienists.” (I 1)</p>
Future challenges	<p>“I think need will increase in all age-groups, but mostly among the many elderly patients, and also among children and adolescents. There are major challenges with newly arrived immigrants and their dental health.” (I 7)</p> <p>“There is a higher risk for cavities or tooth decay for those coming from an immigrant background. Finding other venues and maybe other ways of working, keeping it health orientated, is probably a vision for the future.” (I 3)</p> <p>“It would be great to have DH education programs in every country that in itself would be an important step forward. It is strange that Europe has not come further regarding this, I think. It should exist in all countries, and of course, the different programs should be approved and certified throughout the EU.” (I 9)</p>

developed and broadened over the years. Hach *et al.*<sup>[14]</sup> pointed out that ongoing changes in the profession, such as a broadening range of tasks and new patient groups, concur with the perceptions of our informants and argue that the need for DH skills in the future may grow. They also point out that the DH profession in Europe is a dental profession responsible for a wide variety of tasks.<sup>[14]</sup>

All stakeholders stated that DHs should use a holistic approach in the prevention and treatment of oral diseases and the maintenance of oral health. One discussion over the years has been whether DHs should work with restorative treatment. Sweden does not offer training in restorative dental care in DH programs.<sup>[9]</sup> Several states in the United States, however, have offered this competence to DHs, and one study found that patients were satisfied with the treatment they received.<sup>[15]</sup> A study in Denmark reported that the task that was most frequently delegated to DHs in both public and private dentistry was invasive caries therapy.<sup>[14]</sup> The 2018 workshop, “The Shape of the Future of Dental Education for Dental Caries,” stated that the DH profession differs significantly among European countries and that the DH role needs to be redefined.<sup>[16]</sup> The European Dental Hygienist Federation continues the work to harmonize hygienist education across Europe.<sup>[17]</sup>

Today, DHs are competent to perform routine oral examinations of children and adults, caries prophylaxis, and prevention and nonsurgical treatment of periodontitis. In Sweden, the promotion of oral health is still important.<sup>[18,19]</sup> The ability to achieve patient compliance is important for good treatment outcomes of oral diseases and for maintaining oral health.<sup>[7,20]</sup>

Some studies have observed that DHs become better team members when offered meaningful intra-professional education with dental students, which increases collaborative skills and knowledge.<sup>[21,22]</sup> It is important to begin developing collaboration skills during education so that DHs are prepared for professional working life, especially as, according to the stakeholders, DHs must occasionally collaborate with other health-care professionals in child health and family centers, with school staff and nurses, and with nutritionists regarding the elderly. Other studies have also confirmed this need for better collaboration skills.<sup>[6,23]</sup>

The informants in this study discussed future challenges in dentistry as demand for social and health-care services among the elderly and among asylum seekers and immigrants is expected to rise. Two interview studies with immigrants and asylum seekers concluded

that oral health was important and that these groups were in need of health education and emergency and basic dental treatment.<sup>[24,25]</sup>

DHs will require more knowledge about general systemic diseases as well as diseases in the oral cavity, such as various mucosal lesions, as they will be receiving greater responsibility for general oral examinations. A study investigated whether DHs had used a screening device as an adjunct to screening for oral cancer and other mucosal lesions.<sup>[26]</sup> The results showed that continuing education in, for example, oral pathology is needed to increase the confidence and skills of DHs.<sup>[26]</sup>

## STRENGTHS AND LIMITATIONS OF THE STUDY

One limitation was that the questionnaire was not validated; however, the questions used were part of the alumni survey at KI and concerned essential parts of the education. The questionnaire response rate was rather low (54%), despite three reminders. Another limitation was that we did not analyze the nonresponders. All responders represented stakeholders in the Public Dental Service; no representatives of other dental care organizations responded. One explanation could be that the Public Dental Service has a historically strong position in the Swedish dental care market.<sup>[27]</sup>

Strength of the interview study was that the stakeholders represented different dental care organizations and counties in Sweden. In other words, stakeholder perceptions of DH competence and the professional role of DHs can most likely be generalized.

Some aspects of content analysis must be considered, for example, trustworthiness, which was achieved by using critical appraisal of quality research.<sup>[13]</sup> Dependability, involving the consistency of the data, was achieved by the interviews being structured and the use of an interview guide. The same questions were put to all informants, but not necessarily in the same order, and any follow-up questions were dependent on the responses, to provide further depth and detail to the answers.

Credibility was achieved by choosing stakeholders with differing backgrounds and experience, from different dental service organizations and counties, and from both genders. The role of the interviewers is a possible confounder to consider. The interviewers had no relation to the stakeholders. The interviewers had experience as teachers in the Dental Hygiene Program. This made it easier to ask appropriate follow-up questions, which enhanced the credibility of this study. On the contrary, the interviewers were also DHs, and this could possibly have influenced responses. Credibility was also achieved

by selecting suitable meaning units, categories, which did not exclude relevant data or include irrelevant data.

Confirmability is another aspect to consider in qualitative studies; research is never completely objective, to preclude that, it is important to describe each step of the data analysis. Confirmability was improved by allowing individuals in the research group to make their own preliminary analyses, which were then revised after reflection and discussion until consensus was reached.

To facilitate the judgments of others concerning transferability, descriptions are given on the settings together with rich presentations of the study findings, for instance, by presenting several quotations from the interviewees. The study can be transferred to other dental hygiene programs and to countries that are planning to introduce a DH education and need an understanding of DH competence and the role of DHs in dentistry.

## CONCLUSION

DHs, responsible for prevention and oral health promotion, are essential members of the modern dental team. The need for DHs to collaborate with other dental and general health-care professionals to meet the future demands of society will increase.

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## CONFLICT OF INTEREST

There are no conflicts of interest.

## AUTHORS CONTRIBUTION

All authors listed have significantly contributed to the development and the writing of this article.

## ETHICAL POLICY AND INSTITUTIONAL REVIEW BOARD STATEMENT

The Regional Ethics Committee in Stockholm, Sweden approved this study (Dnr. 2016/270-31/1), March 2016.

## PATIENT DECLARATION OF CONSENT

All participants gave their oral consent and signed informed-consent forms.

## DATA AVAILABILITY STATEMENT

As stated in the manuscript, all data (questionnaires and interviews) has been destroyed part of the ethical agreement.

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