

DOES DENTAL HYGIENIST PROFESSIONAL EDUCATION MEET THE NEEDS OF WORKING LIFE? EDUCATORS' VIEWS

Jokiaho Tanja-Lotta ¹, Kaakinen Pirjo ^{1,2}, Virtanen Jorma I ^{3,2}

1 Research Unit of Nursing Science and Health Management, Faculty of Medicine, University of Oulu, Oulu, Finland

2 Medical Research Center Oulu, Oulu University Hospital, Oulu, Finland

3 Research Unit of Oral Health Sciences, Faculty of Medicine, University of Oulu, Oulu, Finland

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Correspondence:

Tanja-Lotta Jokiaho
Research Unit of Nursing Science and Health Management
Faculty of Medicine, University of Oulu
FI-90014 Oulu, Finland
Tel.: +358407261789
Email: lotta.jokiaho@outlook.com

ABSTRACT

Objective: The aim of this study was to describe the compatibility of dental hygienist education with working life from the perspective of their educators.

Methods: We conducted a qualitative study among principal educators of dental hygienists in Finland in 2012-2013. The participants were leading educators of dental hygienists (n = 13) from the four Finnish education units. We used semi-structured interviews based on previous Nordic studies to collect the data and analysed them using inductive content analysis.

Results: According to the educators, dental hygienists' skills at work are neither fully nor effectively utilised, even though their education meets the needs of working life quite well. The educators felt that hygienists' professional competence would prove more useful in health promotion and orthodontic measures, and that the division of labour should be clearer. Clarifying this distinction in periodontal therapy could be improved.

Conclusion: Fully utilising dental hygienists' competence in clinical work would benefit from further development. The content of dental hygienists' clinical work should be reassessed so as to utilise their skills more fully. The compatibility of dental hygienist education corresponds largely to the needs of future working life.

Key words: dental hygienists, dental care delivery, education, oral hygiene, professional competence

INTRODUCTION

The contribution of dental hygienists to oral health care is widely recognised worldwide. The practical work of dental hygienists is similarly well known: most dental hygienists work in clinical practice (1, 2) and have received their principal education in prevention, health promotion and periodontal therapies (3). Dental hygienists are considered preventive oral health care professionals (4, 5, 6, 7) who address the oral health care needs of the population (3). A comparative study of 21 countries showed that periodontal therapy is the most common activity that dental hygienists perform (2).

The total number of dental hygienists has increased worldwide (1, 2, 8), but varies considerably from country to country (2). In many European countries, dental hygienists are educated to work independently in the private and public sectors, in hospitals and in permanent care facilities (3). In the Nordic countries, the public sector provides the majority of care, and oral health care personnel take care predominantly of children and adolescents, but also of growing numbers of adults and elderly people in institutional care and special circumstances (9).

In most European countries, dental health care is free for children and adolescents (4), and services are often financed by tax revenues (9). In Finland, the Public Dental Service (PDS) and private services are about equal in size (10). The contribution of dental hygienists to oral health care services is considerable, and most dental hygienists in Finland work in the public sector (the rest, in the private sector) (11). Dental hygienists are handling a growing number of patient visits (12). Preventive care and maintenance treatment are needed now more than ever, thanks to improvements in the general oral health status of the population. Because young people generally enjoy good dental health, they need mainly preventive care and oral health examinations, which dental hygienists can perform. (8).

Nowadays, the growing demand for social and health care services due to the aging of the population is placing significant pressure on these services (13). The aging of the population poses a future challenge, because the elderly proportion of the population is expected to rise (14, 15). As the population ages, dental hygienists will require more expertise to meet, for example, the oral health care needs of the elderly.

The dental hygienist education in Finland is similar to the other Nordic countries (3). The education lasts for 3.5 years includes 210 ECTS (European Credit Transfer and Accumulation System) credits, of which 75 credits is a practical training period, which is carried out supervised practice in teaching clinics and public health care centres. The key studies are health promotion and oral health care, and research and development. The National Supervisory Authority for Welfare and Health (Valvira) grants the right to practice as a licenced dental hygienist in Finland.

Young dental hygienists also want to diversify their job descriptions (16, 17). Although dental hygienists in Finland and Norway are willing to perform more clinical measures than before, they find that their professional competence is inadequate to carry out these new tasks (17). On the other hand, dental hygienists are often more willing to perform a variety of measures, however dentists are seldom ready to make a move (16). Studies have also found that dentists in Norway are unwilling to transfer tasks to dental hygienists, while dentists spend almost 40% of their working time on tasks, such as examinations, screenings, and basic care, which dental hygienists are qualified to perform (18).

Graduating dental hygiene students have self-evaluated their professional competence as fairly good (19), however clinical training experience suggests that their basic education is too limited. Moreover, their basic education should include more management training and studies in theoretical dentistry

(20). While graduating dentists felt their clinical education corresponds closely to the requirements of clinical work (21) and that their professional competence is quite good (22), little is known about how dental hygienists' education meets the changing needs of working life. The compatibility of dental hygienist education and practical work is worth studying, as the available information on how dental hygienists' education meets the current needs of working life is insufficient. It is important to provide information that will ensure the availability of oral health care services and to promote the oral health of the general population. Our study aimed to describe the compatibility of dental hygienist education and of working life from the perspective of their educators. The research question was 'How educators perceive dental hygienist education and working life competence requirements?' This information can serve useful in the development of professional competence among dental hygienists; in addition, this information can serve to develop basic and continuing education in oral health care.

METHODS AND SUBJECTS

This qualitative study is part of an explorative study conducted among educators of dental hygienists in Finland in 2012-2013. The participants in this study were leading educators (n = 13) with responsibility of dental hygienists' education from the four educational units in Finland. We interviewed the educators from the University of Applied Sciences, the Universities of Helsinki, Kuopio, Oulu, and Turku, and the corresponding Teaching Health Centres in 2012–2013 (23). The leading educators were responsible for the dental hygienist curriculum for clinical training. A detailed description of the study (and participants) have been presented earlier (23). Participants completed the background information form, which asked about their gender, age and experience in current profession (in years). Most of the participants were women (92%), and their experience in current profession ranged from 6 to over 25 years. The participants ranged in age from 31 to over 60 years.

We used semi-structured interviews to collect the data, and the themes were based on those of previous studies: we used interviews based on previous Finnish and Nordic questionnaire studies to enquire about relationships between hygienists and dentists as well as topical issues in the provision of oral health care (17, 23). An expert group comprising dentists and dental hygienists evaluated the initial questions and statements for the interview and suggested modifications. All participants were presented with the same questions, ordinarily in the same order, and answered them in their own words. During the interviews, a researcher wrote down a few notes in order to encourage the participants to talk about their experiences more freely and openly; after the interviews, the researcher wrote down the participants' responses. In addition, the method encouraged the participants to describe widely explored topics (24). The interviews lasted from 30 to 120 min, and the participants' responses totalled 13 pages of written material (Microsoft Word, Times New Roman, 1.5 spacing, 12-point font).

Ethical aspects

The Ethics Committee of Human Sciences at the University of Oulu approved (No. 4/2014-3) the study. The participants provided their informed written consent and were informed about the purpose of the interview. We also obtained the necessary site permissions. All the material relating to the study was stored in a safe place, and all electronic resources were password protected.

Data analysis

We transcribed interview notes and used inductive content analysis to analyse the data (24, 25, 26, 27). The aim and research question of the study guided the data analysis (26). Inductive content analysis is a systematic and objective method intended to describe the phenomenon studied (27); the method is well suited to analysing the sensitive phenomena specific to nursing (26), and is often used in health science research (28). The inductive method is recommended for use when the available information is either insufficient or too fragmented to adequately study the phenomenon under question (29), and we chose it to attain a broad description of the phenomenon (26, 27).

We began the analysis by carefully reading the transcribed interview notes several times to become familiar with those. First we organized the qualitative data by coding and reducing the interview notes. Then we grouped together those expressions with the same meaning that matched the research questions. The next step was to organise into subcategories those expressions with the same meaning that we grouped together and name them. Finally, the subcategories were combined into upper categories and then into main categories, and named them based on the content (24, 25, 26). An example of the data analysis process appears in **Figure 1**.

RESULTS

In our study, we portrayed the compatibility of dental hygienist education with working life in Finland as the competence of dental hygienist education, the content of dental hygienist clinical work, the utilisation of dental hygienist competence, and the development of work and education.

Competence of dental hygienist education

According to the educators, the competencies of dental hygienist education consisted of collaboration with dental students and dental nurses, oral health care counselling, oral health maintenance treatment, and research and development (**Figure 1**).

The educators felt that dental hygienist education in Finland provides sufficient competencies for collaboration. The education includes learning collaboration skills and co-operation with various actors. The education also provides the opportunity to improve interpersonal skills. Educators mentioned that working as a dental hygienist requires the skills to divide one's workload and to work in a multi-professional team. Good co-operation with other professional groups such as social workers and public health nurses is a core component of dental hygienist education. In addition, the education provides the opportunity to improve interactions and communication skills, especially between the patient and the dental hygienist.

The educators were confident that dental hygienists' education provides sufficient competencies for counselling in oral health care, including for the individual counselling needs of patients and promoting oral health. Patient counselling based on patients' individual needs consists of oral hygiene and oral health care counselling and motivation. According to the educators, the competencies related to health promotion provided by hygienists' education focuses on counselling adults as well as

children and adolescents, childhood counselling (in co-operation with the parents), and health counselling, as well as coaching and implementing smoking cessation.

The educators mentioned that dental hygienists' education provides competence for maintaining patient oral health, including disease prevention, oral and dental care measures, and the assessment of patient treatment needs. In the opinion of the educators, disease prevention in education consisted of preventive oral care and preventive measures against oral diseases, such as caries prevention and tooth sealants. They found that training for oral and dental care measures included total periodontal care, the hygiene phase of care and maintenance treatment, scaling, instrumentation, plaque removal, plaque retention, and removal of dental deposits. Dental hygienists' education also included local anaesthesia, and, according to the educators, the curriculum included orthodontic measures such as taking dental impressions, cementing molar bands, and treating a curved lingual bow. In addition, orthodontics education incorporated issues related to dental hygiene routines. The educators mentioned that, in some cases, dental hygienists' education taught prosthodontics where appropriate. To assess patients' oral and dental treatment needs, dental hygienists are also trained to perform cariological, periodontological and occlusion examinations. The educators added that dental hygienists typically conduct oral health examinations for children, so they are taught the skills to identify those factors which are associated with oral and dental disease and perform examinations during dental care.

Regarding competencies for research and development, the educators mentioned that dental hygienists are taught sufficient knowledge and skills to perform evidence-based dental care. They also have sufficient competence to work on projects and to complete a thesis during their studies.

Content of dental hygienist clinical work

Figure 2 shows content of dental hygienists clinical work including tasks to assess patient treatment needs, oral and dental care measures as well as oral health promotion. In clinical work the educators considered the dental hygienist assess essentially patient oral care needs and they make oral health examinations. In addition, dental hygienists work together with dentists in patient dental care, after the dentist has made a diagnosis and treatment plan, when the dental hygienists work as the treatment provider. Oral health promotion is one of dental hygienist's core competencies according to the educators. That includes oral health care counselling and preventive care, such as early treatment and prevention of oral diseases, in particular the prevention of periodontal diseases.

The educators were aware of that in clinical work dental hygienists' perform oral and dental care measures as periodontal treatment, especially the calculus removal. Also, treatment of gingivitis and treatments to inhibit caries progression are included in dental hygienists' clinical work. The educators also included other measures, such as small fracture repairs in hygienists' work. Dental hygienists are depicted as the oral health nurse and clinical work focuses on the treatment of the disease, which has become a central measure.

Utilisation of dental hygienist competence

According to the educators, the utilisation of dental hygienists' competencies manifested in two ways: from a positive perspective, the duties and competencies were balanced in relation to the education, whereas from a negative perspective, the duties and competencies were unbalanced (**Figure 3**).

When the duties and competencies are in balance, the dental hygienist's job description was multifaceted, and expertise met organisational and societal needs. The educators described the wide range of duties and demands as matching the dental hygienist's competencies; expansion of the job description was therefore unnecessary. The educators added that the division of duties between dental

hygienists and dentists was based on their respective competencies, and that the dental hygienists' patients were not too challenging; rather, they provide support for patients' oral hygiene counselling and advisement as well as easy instrumentation.

The educators felt that, owing to underutilised resources and the utilisation of dental hygienists' job resources to perform nonessential tasks, dental hygienists' duties and competencies were unbalanced in relation to their competence. In short, dental hygienists had no opportunity to maintain or promote oral health within the framework of their competence. According to the educators, job demands did not always correspond to the dental hygienists' competence; consequently, measures for periodontal treatment, for example, could prove too challenging. The educators mentioned that the division of duties between the dental hygienist and the dentist was not always sufficiently clear, and dental hygienists performed tasks for which they were overqualified based on their skills. For example dental hygienists often assist dentists which is typically the task of dental nurse. Dental hygienists' workload varies and can sometimes lead to burnout or mental and physical stress. According to the educators, dental hygienists' skills requirements vary between the private and public sectors, possibly because of the differences in client base.

Development of work and education

Based on the educators' views, the development of work and education led to changes in dental hygienists' work tasks, co-operation and the division of labour, as well as in attitudes. **(Figure 4)**

The educators proposed changes in dental hygienists' work tasks, especially for the promotion of oral health, oral and dental care measures, and oral health examinations. In the future, dental hygienists' skills and work tasks are needed more for the promotion of oral health and preventive activities as in smoking and caries prevention, and the dentist's work tasks should not be used for basic dental measures. According to the educators of oral and dental care measures, should dental hygienists'

work tasks make more use of work related to orthodontic measures and equipment, such as taking dental impressions. In the future, dental hygienists' education should improve dental hygienists' competence in orthodontics and prosthetics. The educators estimated that the need for nursing care in cariology will strengthen in future, because dental hygienists may prove helpful in reconstructive treatment, for example, by performing small restorations in primary teeth. Similarly, dental hygienists' skills in periodontal care should be developed, particularly in automatic instrumentation and instrument maintenance. Educators also foresee future challenges for dental hygienists, as they will meet the oral health treatment needs of the elderly, because dental hygienists usually handle the oral health care of patients in elderly homes. The professional competence of dental hygienists should be utilised to examine patients' oral health, and especially to determine patients' oral health care needs. The educators also proposed adding more clinical practice to dental hygienists' education.

According to the educators, co-operation and the division of labour between dental hygienists and dentists should be appropriate and equitable; it should also be developed during their studies, and the teamwork in particular should be emphasised. In addition, multi-professional co-operation among all health care personnel as well as the different professional groups should be developed. The educators mentioned the need to clarify a clear division of labour between dental hygienists' and dentists' tasks in accordance with their responsibilities, because of uncertainty about which tasks belongs to whom, especially with regard to periodontal treatment.

According to the educators, attitudes also need to improve, because dentists' attitudes towards hygienists vary. Because dentists are seldom aware of the content of dental hygienists' education and their related competencies, they tend to question and underestimate hygienists' skills. This prevailing attitude is evident, among other things, during assessments of treatment need, as some dentists are reluctant to let dental hygienists perform oral health examinations. On the other hand, among patients

with periodontal treatment needs, dental hygienist skills are entrusted too much, as the dental hygienist becomes responsible for the implementation of the entire periodontal treatment. According to the educators, dentists' opinions of dental hygienists' knowledge are more positive when they cooperate with the dental hygienist. The educators estimated that dental hygienists would like to have dentists support them more in their work; in contrast, some of the educators felt that dentists understand the dental hygienist's job demands and support them in their work.

DISCUSSION

The aim of this study was to describe the compatibility of dental hygienist education with working life from the perspective of their educators. The main findings of this study were that the educators felt that dental hygienists' education corresponded well with their clinical competence, and that their education meets the needs of working life. However, the educators also had ideas for improving their education and clinical work, such that dental hygienists' professional expertise could be utilised more extensively than before.

This study found that dental hygienists' education provides competencies for collaboration skills as intended in the curriculum. Currently, health care professionals in the Nordic countries, for example, work in multi-professional groups that require teamwork and communication skills. Dental hygienists work closely with patients and must use communication skills in their clinical work (30). Discussion and listening skills in particular are essential for dental hygienists (31). In addition, research has been found that interaction among oral health care staff plays an important role in the treatment of patients with dental fears (32), as dental staff create a positive, trusting and supportive atmosphere.

In addition to communication skills, dental hygienists' education ought to provide them with the skills to counsel patients and to promote oral health. Previous research shows that the vast majority of dental hygienists consider patient counselling important (33), and those close to graduating dental hygienist students also highly value their health promotion skills (19) and appreciate their patient counselling knowledge and skills also (33). Health promotion is one of the dental hygienist's core competencies in clinical work, and their responsibility in periodontal treatment, especially scaling, is considerable (20). In Finland and Norway, most dental hygienists' working hours involve clinical patient care (9). Widström et al. (2015) showed that dental hygienists in the public sector in Finland perform most of the preventive treatment, periodontal treatment and examinations (34). Oral hygiene instruction is

also a general measure regardless of whether the dental hygienist is working in the private or public sector (9). In addition, a dental hygienist's practical work typically includes oral health counselling for patients.

The results regarding the utilisation of dental hygienist competence in clinical work were contradictory. The results showed that dental hygienists' tasks are varied and that their skills are in line with their job requirements, but their expertise is underutilised. Their dental hygienist skills are used for obscure work tasks that are either too demanding or too easy. Periodontal treatment measures, for example, could be too demanding, as a previous study found that dentists considered dental hygienists' skills in implementing periodontal treatments to be good – even better than their own ability (35). According to the educators, dentists are unfamiliar with the content of dental hygienist education and dental hygienists' skills. Gallagher's and Wright's (2003) study, which identifies a gap in dentists' knowledge about what measures dental therapists can perform, found similar results (36). In our study, dentists' lack of awareness of hygienists' professional competence was evident in the way some dentists were reluctant to permit dental hygienists to perform oral health examinations. However, some have proposed the potential to screen for occlusal caries after training (37). Because barriers to utilising dental hygienists' expertise stem from workplace tradition, dentists often oppose their involvement, and the lack of diversification in patient cases persists (20).

Our findings indicate that dentists who co-operate with the dental hygienist generally hold positive attitudes towards dental hygienists. According to the educators, however, dental hygienists' education should teach co-operation and the division of labour, and emphasise teamwork skills in particular. Dental students and dental hygienist students should learn to work together already during their training in order to be more aware of each other's level of expertise (38). Improving teamwork in the future is important, because dental hygiene and dental students are seldom fully aware of each other's roles; as a result, the oral health care team does not always work well together (39). Team training

through the assigning of care among dental professionals promoted a higher proportion of preventive care measures (40).

The division of labour, especially regarding periodontal treatment, should be a topic of emphasis in the future, and the division of tasks should be clearer. The division of labour has long been highlighted in oral health care for reasons of cost-effectiveness, however teamwork is still not a widely emphasised skill in dental care (34). Dental hygienists need their colleagues' support when treating periodontal patients (30). Differences of opinion between dentists and dental hygienists may cause the hygienists to feel isolated and overloaded with responsibility when treating patients for periodontal disease. In our study, the educators also found that dental hygienists would need dentists to show more support for their work, and several educators had confidence in dentists' understanding and appreciation of dental hygienists' demanding workload and in dentists' willingness to support dental hygienists in their work.

Dental hygienists have a broad range of expertise in preventive care which should be fully taken into account when assessing their work tasks and processes. For instance, dental hygienists have shown higher engagement in counselling smoking prevention and cessation than dentists (41), which is in line with our findings. In addition, having dental hygienists perform tasks for which their expertise is adequate is ultimately more cost effective (18).

Dental hygienists believe that their professional expertise would be better utilised if they could perform more orthodontic measures and caries screenings among adults, as well as take clinical photos (20). In addition, dental hygienists would also like to administer local anaesthesia, perform glass-ionomer and composite restorations, and carry out teeth whitening more often (17). Studies have found hygienists to be sufficiently qualified through their education to administer local anaesthesia (42, 43). Although previous research indicates that dental hygienists are more involved

in orthodontics than before (34), the educators proposed assigning even more orthodontic measures to hygienists and that their education should focus more on orthodontic expertise. Competence in orthodontic treatments, which dental hygienists possess thanks to their education, should be utilised more often in order to improve oral health care efficiency (44). This could also prevent work-related musculoskeletal disorders among dental hygienists, which pose a significant occupational risk due to the repetitive work associated with periodontal treatment. Reports have suggested that the completion of orthodontic measures in particular have a protective effect against dental hygienists developing musculoskeletal disorders (45).

According to the educators, despite the variation in dental hygienists' workload, their high workload could nevertheless pose a risk factor for burnout, since hygienists often work alone, which increases their mental and physical stress. Dental hygienists find their work both physically and mentally stressful (33, 46). An area of emphasis in educational development for dental hygienists is oral health care for the elderly, because hygienists are becoming increasingly responsible for the oral health care of institutionalised patients. For instance, dental hygienists are quite capable of assessing the need for periodontal disease treatment among the elderly (47).

In Finland, major legislative reforms in oral health care services have been implemented during the last decade in an attempt to improve access to care. These changes were designed to eliminate age restrictions, as well as to reduce existing barriers to providing public dental care (10, 48). In addition, the growing elderly population will challenge society in future, as in Finland, the need for oral health care services is growing (48). The elderly retain their own teeth longer than in the past, and their awareness of oral health has improved; consequently, more dental hygienist services will be needed (8). The role of the dental hygienist in implementing periodontal treatment will become more significant in the future, because periodontal diseases are still quite common in young adults (48),

who also have a greater need for periodontal treatment than for dental caries treatments (49). However, dental hygienist education in Finland does not include teaching of more advanced periodontal treatment, and barriers currently limit the depth of the periodontal pockets dental hygienists can remove (34). These trends will place greater demand on dental hygienists' skills and competence, especially for the treatment of adults and the elderly; consequently, these trends should be taken into account in dental hygienists' basic and continuing education. In Finland, dental care will increasingly focus on the efficiency of health care provision so that everyone will receive the statutory services they need. The dental community should therefore focus on developing the division of labour and co-operation as well as improvements in attitudes.

Trustworthiness and limitations

Using the Lincoln and Guba's (50) criteria of credibility, dependability, confirmability and transferability ensured the trustworthiness of this qualitative study (50). The study achieved credibility by selecting study participants who had the necessary experience. This study used as its main method personal interviews among Finland's leading educators of dental hygienists. A significant strength of this study was its inclusion of all four dental hygienist educational units, including health institutes, dental schools and teaching health centres (23). Moreover, collection of the data with semi-structured interviews strengthened the credibility of the study results. This method aimed to encourage participants to express and describe their views freely and openly. In addition, the interviewer also had a background in hygienist and dental education (23). The study's credibility is further strengthened by the fact that two researchers (TJ, PK) analysed the data independently before drawing their conclusions together. The classification of the research data were reorganised while the analysis was underway, thus ensuring that the main researcher's own experiences of dental hygienist work did not affect the conclusions of the study. The confirmability is supported by describing analysis process in detail in the text and figures, thus enabling follow-up of the process and emphasising its trustworthiness. Moreover, the research process was described as accurately as

possible, so that the reader would have the opportunity to assess the transferability of the results to other comparable situations. The fact that the main researcher received peer feedback and implementation of the research process was reviewed beforehand ensures the dependability of the study results. On the other hand, the fact that the semi-structured interviews were recorded manually and that some nuances may have been lost during that phase could be considered a limitation. All in all, one must bear in mind that this study presents educator views only, and not the views of dental hygienists, which merit further investigation.

Conclusions

The utilisation of dental hygienist competence in clinical work merits further development. The content of the clinical work of dental hygienists should be reassessed so that when education corresponds to the needs of future working life, their skills can be fully utilised especially their key competencies health promotion and oral health care, and research and development. Our findings from among Finland's leading educators of dental hygienists may serve as basis for developing dental hygienists' clinical work competencies, the division of their work tasks, and continuous education. Further research is needed to explore dental hygienists' vision of professional competence and its match to the future needs of working life.

CLINICAL RELEVANCE

Scientific rationale for study

This study sheds light on educators' opinions of the compatibility of dental hygienist education with the needs of working life.

Principal findings

Dental hygienist professional competence from basic education corresponds well to working life needs, though there is room for improvements (e.g., distinguishing the responsibilities of dentists and dental hygienists).

Practical implications

Increased knowledge of dental hygienist professional competence will support future development of the content of dental hygienist education. Dental hygienists' education must take into account the requirements of working life (e.g., education should further emphasise the importance of teamwork between dental hygienist and dental students).

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CONFLICT OF INTEREST AND SOURCES OF FUNDING STATEMENTS

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FIGURE LEGENDS

Figure 1. Competence of dental hygienist education

Figure 2. Content of dental hygienist clinical work

Figure 3. Utilisation of dental hygienist competence

Figure 4. Development of work and education

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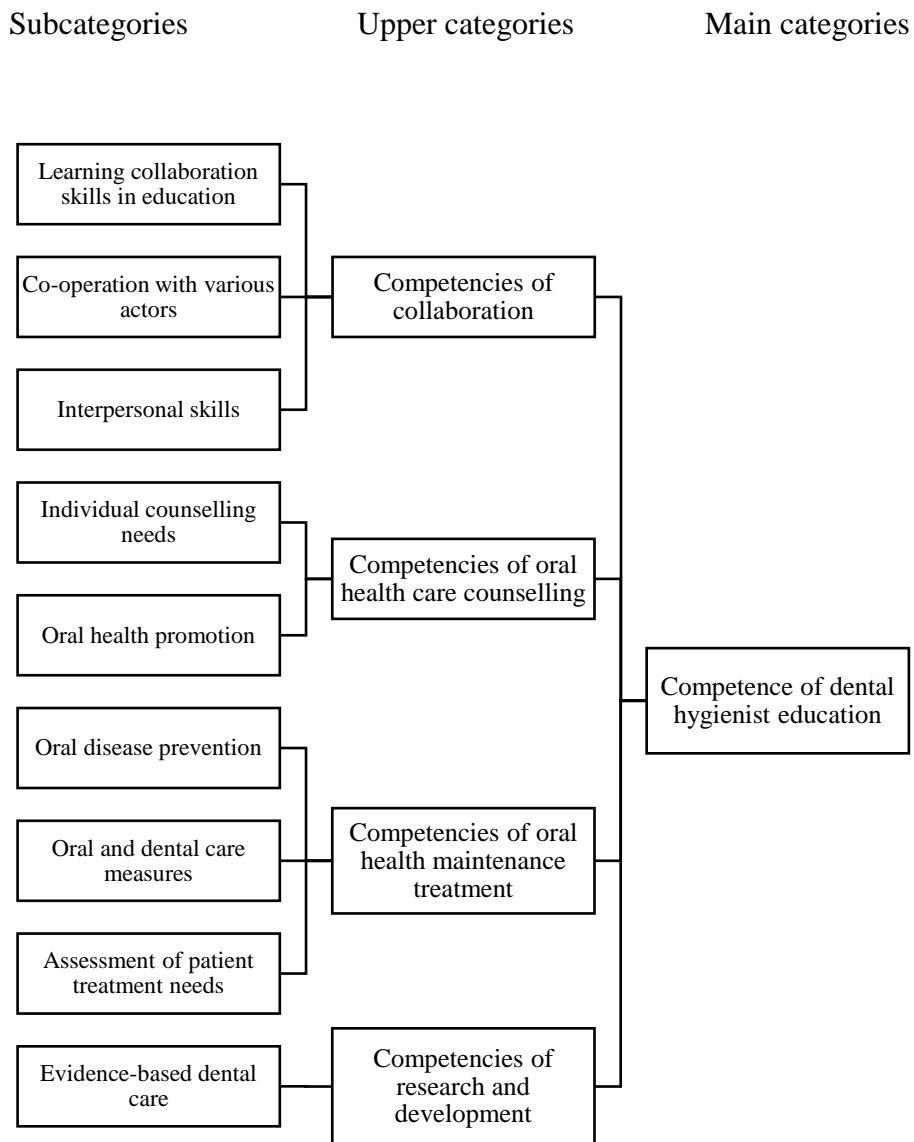
Fig. 1.

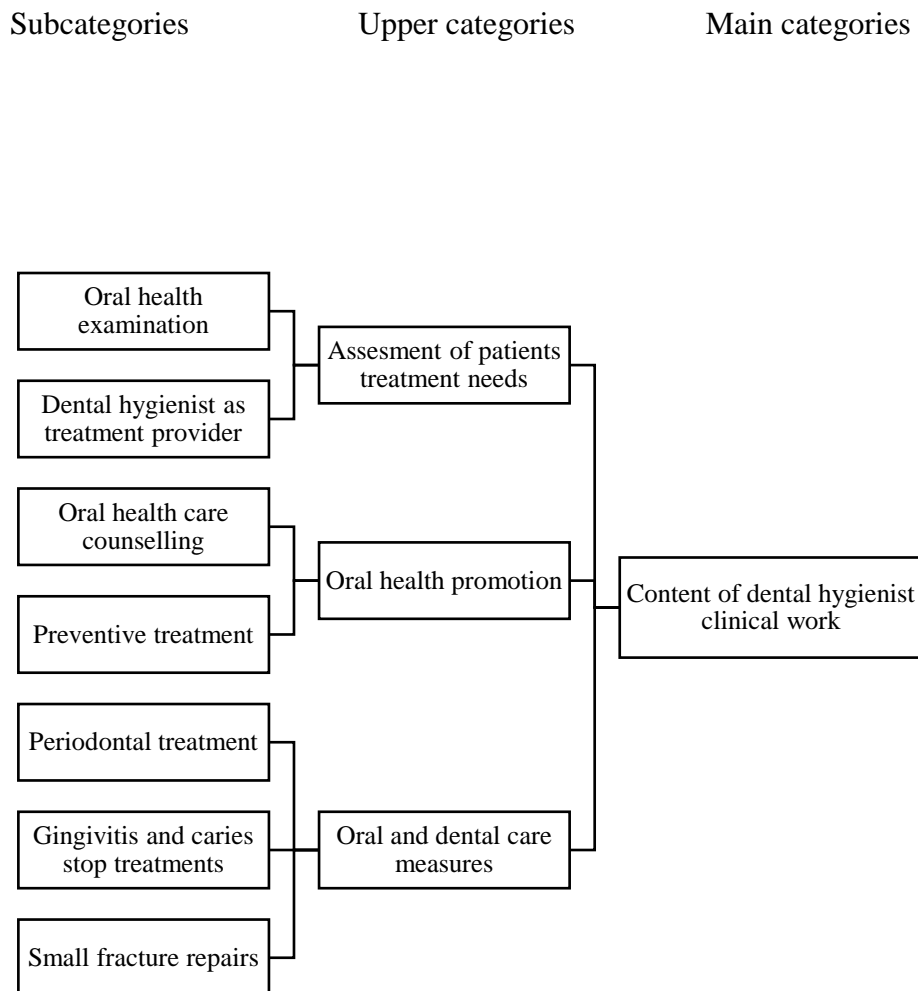
Fig. 2.

Fig. 3.

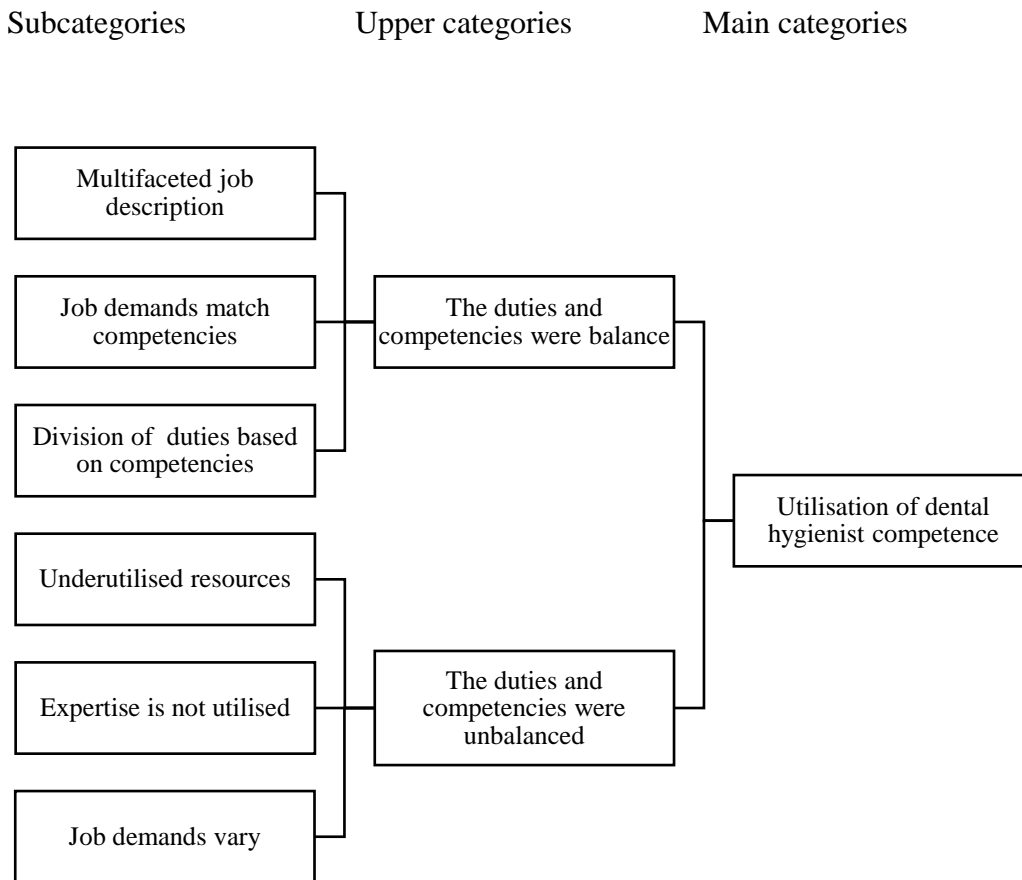


Fig. 4.