Burnout among dentists: Identification and prevention
Gorter, R.C.

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CHAPTER 2

STRESS AND BURNOUT IN DENTISTRY: A REVIEW OF THE LITERATURE*

2.1 Introduction

In the international dental literature empirical studies on stress among dentists have appeared regularly. Burnout among dentists, on the other hand, was object of measurement only sparsely. Besides these objective, empirical contributions, on both dental stress and burnout numerous opinions have been published. The latter publications are usually characterised by good advice from senior colleagues, are sometimes case-driven, and are always awareness raising with the warning not to neglect the topic. The present chapter aims to describe the current state of knowledge on burnout in dentistry. Since burnout is seen as a consequence of occupational stress, the current state of knowledge on dentists’ occupational stress will have to be described as well. Therefore, at first, an overview will be given of both empirical and non-empirical contributions in literature to the topic of occupational stress and burnout among general dental practitioners. As far as possible, personal and work place characteristics will be distinguished, as well as causes, consequences, preventive suggestions, and cures. Some questions regarding stress and burnout are hard to answer, for example the causality question. Therefore, distinction of the characteristics cannot be too rigid. Secondly, since most research on this topic in dentistry was conducted without theoretical framework, the findings will be categorised from a theoretical perspective. More specifically, given the backlog in evidence-based knowledge on burnout in dentistry, the focus will be on current theoretical developments with regard to burnout. Special attention will be given to prevention. To start with, a short description of occupational stress and professional burnout will be given.

2.1.1 Stress and burnout

Occupational stress refers to the role of one’s work in psychological well-being. Essentially, occupational stress occurs when an imbalance exists between job demands and the response capability of the worker.1 A person’s perception of work contents, work circumstances, terms of employment, professional relations,

* A special word of thanks goes to Dr. Gerry M. Humphris for his comments on a first draft of this chapter.
LITERATURE REVIEW

and the possibilities of coping can make the same work a source of stress for one person, and a joy for someone else. Moreover, demographic, personal, and social factors complicate the workload experienced. The symptoms of occupational stress are usually divided into physical, emotional - cognitive, behavioural, and social symptoms. It must be noted that a certain level of stress often is needed to perform well, whereas too much, but also too little, demand on one’s skills and abilities creates an imbalance. A well-recognised methodological difficulty in studying occupational stress is the problem of causality.\(^2\) It is usually very hard to decide whether someone is under stress because of a heavy workload, or if one experiences the workload as being too heavy because one is under stress.

<table>
<thead>
<tr>
<th>LACK OF RESOURCES:</th>
<th>DEMANDS:</th>
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<tr>
<td>(Diminished):</td>
<td>Work overload</td>
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<tr>
<td>Control coping</td>
<td>↓</td>
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<td>Social support</td>
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<tr>
<td>Skill use</td>
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<td>Autonomy</td>
<td></td>
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<tr>
<td>Decision involvement</td>
<td></td>
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**BURNOUT:**

Exhaustion ⇒ Depersonalization
Cynicism

Diminished Accomplishment & Efficacy

**COSTS:**

Diminished organizational commitment
Turnover & absenteeism
Physical illness

*Figure 2.1 Structural Model of Burnout (Adapted from: Maslach et al.\(^3\))*
When occupational stress is chronic, professional burnout is a possible consequence. The concept was introduced into the scientific literature by Freudenberger. The definition of burnout most widely accepted, however, comes from Maslach & Jackson. According to this definition, becoming mentally or emotionally exhausted is the key aspect of burnout. As emotional resources have become depleted, a professional worker will feel no longer able to cope with the job psychologically. Another aspect is the development of a negative, cynical attitude towards one’s clients or patients. This is termed: depersonalisation. A third aspect of burnout that Maslach & Jackson emphasise is the tendency to evaluate the quality of one’s work negatively. This feeling of diminished personal accomplishment will correlate negatively with the first two components.

Several models to explain the dynamics of burnout have been developed, and one is referred to Schaufeli et al., or Schaufeli & Enzmann for an extensive description. Basically, these models can be distinguished by their emphasis on either an individual, an interpersonal, an organisational, or even a societal approach. A general model of burnout, with major antecedents and consequences, is presented in the manual of the most widely used instrument to measure burnout, the Maslach Burnout Inventory. As can be seen in Figure 2.1, the model includes all kinds of demands and (lack of) resources that provoke burnout, which in turn has several costs. According to this model, depersonalisation is a result of trying to cope with exhaustion, while diminished personal accomplishment operates independently. When describing the literature on stress and burnout among dentists, this general model will more or less frame the independent facts and visions.

The three dimensions that define burnout appear to be highly relevant for dentists. For instance, in dentistry long working hours and high concentration may easily cause exhaustion, one works closely with recipients of care of whom one has to keep some professional distance, and always having to keep up with rapidly changing developments may become too much to ask. Before turning to what has been reported in literature in more detail, a quote from a dentist being interviewed on his own burnout experience may illustrate the present topic adequately (Box 2.1).

**Box 2.1 A dentist’s quote on burnout**

“One day, I started realising what was happening to me. I was in my practice and I looked at a small alcohol burner I keep there. I used to warm certain instruments in the little flame. In the burner, there is some alcohol, and also a taper. When the burner runs out of alcohol, the flame will still be there for a while, but because there is no more fuel, it will begin burning the taper. And I felt that that was exactly what was happening to me.”
2.2 Methods

In order to collect an overview of stress and burnout among dentists, the electronic databases of PsycLit and Medline were used, covering the years 1966 to early 1999. Using the keywords “stress”, “burnout”, “dental”, or derivatives, a first selection was created. Deletion of some papers was necessary since “stress” is also used in dentistry referring to patient fear for treatment, while “burnout time” is also used in the context of dental materials. Although the concept of (loss of) job satisfaction is closely related, it was decided not to include publications in this field; their large number justifies a separate study. The search was completed by tracing references in the papers found and other, more incidentally obtained, contributions. When encountered, books (or parts of books) were included. Not all contributions referred to in the literature were obtainable. However, the current review brings together a major part of the existing literature on the topic. Given the background of the author, emphasis will be on the English language, with some contributions in German, French and Dutch.

2.3 Results

2.3.1 Occupational stress in dentistry - empirical evidence

A chronological overview of empirical studies on stress among dentists is given in Table 2.1. In this section, the findings will be presented by topic as part of the burnout model.

2.3.1.1 Work demands

Time pressure
Time pressure appears to be a very frequently mentioned stressful aspect of dental practice.\textsuperscript{8-19} Time pressure is defined differently in various studies. Some authors emphasise running behind schedule\textsuperscript{20,21}, with consequences like making longer working hours and working more often in the evening\textsuperscript{17,22}, or taking less time for or even skipping lunch.\textsuperscript{21} Other researchers emphasise the pressure from having not enough time for professional developments and contact with colleagues.\textsuperscript{23}

Work pressure
Closely related to time pressure is the amount of work to be completed in the job.\textsuperscript{14,15,22,24,25,26} But work pressure may also relate to the contents of work, such as medical emergencies\textsuperscript{25}, or may relate to the unpredictability and irregularity in the peaks and the dips of work pressure.\textsuperscript{17,25} The amount of work is reported to be more a problem for men than for women.\textsuperscript{27}
Table 2.1 Overview of research reports on occupational stress among general dental practitioners

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Country</th>
<th>Resp. rate</th>
<th>Number of resp.</th>
<th>Major job related factors</th>
<th>Major person related factors</th>
</tr>
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<tbody>
<tr>
<td>Howard et al.</td>
<td>1976</td>
<td>Can</td>
<td>(b)</td>
<td>33</td>
<td>Running behind schedule, working in the evening, skipping lunch time, working long hours, interference private and professional life, lack of patient appreciation</td>
<td>Type A personality, bad physical condition, little physical exercise, being new at present dental office, little professional experience</td>
</tr>
<tr>
<td>Cooper et al.</td>
<td>1978</td>
<td>USA</td>
<td>(b)</td>
<td>150</td>
<td>Setting up and maintenance of practice, difficult patients, inflicting emotional instability pain, interference private and professional life</td>
<td>Type A personality, high anxiety disposition,</td>
</tr>
<tr>
<td>Godwin et al.</td>
<td>1981</td>
<td>USA</td>
<td>67%</td>
<td>133</td>
<td>Management, team aspects, difficult patients, time pressure</td>
<td>Idealism</td>
</tr>
<tr>
<td>Michelis &amp; Herber</td>
<td>1982</td>
<td>CH</td>
<td>(b)</td>
<td>130</td>
<td>Responsibility, concentration</td>
<td>More pressure at higher Age</td>
</tr>
<tr>
<td>Augustiny / Heim &amp; Augustiny</td>
<td>1983 / 1988</td>
<td>CH</td>
<td>54%</td>
<td>1759</td>
<td>Amount of work, interference of private and professional life, physical pressure, monotony of work / routine, time pressure, practice management, administration, difficult patients</td>
<td>Gender differences, differences in coping style</td>
</tr>
<tr>
<td>O'Shea et al.</td>
<td>1984</td>
<td>USA</td>
<td>(b)</td>
<td>977</td>
<td>Number of working hours, Striving for perfection, much staff in practice, running behind schedule, inflicting pain or fear, late or non-appearance of patients, lack of cooperation during treatment, physical pressure, financial pressure, external regulations</td>
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<th>Author(s)</th>
<th>Year</th>
<th>Country</th>
<th>Resp. rate</th>
<th>Number of resp.</th>
<th>Major job related factors</th>
<th>Major person related factors</th>
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<tbody>
<tr>
<td>Cecchini</td>
<td>1985</td>
<td>USA</td>
<td>?</td>
<td>41</td>
<td>Angry patients, arguing with patients, time pressure, inflicting pain, not fitting crown,</td>
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<tr>
<td></td>
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<td></td>
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<td>equipment failure, running behind schedule, repeating procedure over, anxious patients,</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>ineffective anesthesia</td>
<td></td>
</tr>
<tr>
<td>Cooper et al. 12,13</td>
<td>1987/</td>
<td>GB</td>
<td>85%</td>
<td>484</td>
<td>Medical emergency, difficult patients, time pressure, making mistakes, concentration</td>
<td>Type A personality, male gender</td>
</tr>
<tr>
<td></td>
<td>1988</td>
<td></td>
<td></td>
<td></td>
<td>level, financial pressure</td>
<td></td>
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<tr>
<td>Brand &amp; Chalmers 22</td>
<td>1987</td>
<td>S-Afr</td>
<td>14% ± 168</td>
<td></td>
<td>Financial pressure, inflexible working hours, amount of work, staff inadequacy, difficult</td>
<td>Unbalance between emotional investment and gain</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>patients / children, defaulters</td>
<td></td>
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<tr>
<td>Rankin &amp; Harris 29</td>
<td>1989</td>
<td>USA</td>
<td>(a)</td>
<td>29</td>
<td>Difficult patients, inflicting pain, missing appointments, practice management, financial</td>
<td>Inadequate coping style, no gender or age</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>problems</td>
<td>differences</td>
</tr>
<tr>
<td>Rankin &amp; Harris 30</td>
<td>1990</td>
<td>USA</td>
<td>40%</td>
<td>238</td>
<td>Patient relations, business aspects, inflicting pain</td>
<td>Small gender differences inadequate coping</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>style</td>
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<tr>
<td>Broersma-van der Meulen &amp; Defares 15</td>
<td>1991</td>
<td>NL</td>
<td>66%</td>
<td>200</td>
<td>Time pressure, difficult patients, possibly making mistakes, medical emergencies, amount of</td>
<td>High anxiety disposition, type A personality,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>work</td>
<td>younger age</td>
</tr>
<tr>
<td>Humphris &amp; Peacock 16</td>
<td>1992</td>
<td>GB</td>
<td>92% (b) (c)</td>
<td>44</td>
<td>Medical emergencies, fearful patients, difficult patients, possibly making mistakes, time</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>pressure, equipment failure</td>
<td></td>
</tr>
<tr>
<td>Blinkhorn 38</td>
<td>1992</td>
<td>GB</td>
<td>(b)</td>
<td>40-80</td>
<td>Payment system, feeling of being trapped until retirement, feeling of being undervalued,</td>
<td>Forced to manage practice, or dependent of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>staff inadequacy</td>
<td>social skills while ambition is</td>
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<td></td>
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<td></td>
<td>medical – technical</td>
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<tr>
<th>Author(s)</th>
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<th>Major person related factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnke</td>
<td>1992</td>
<td>D</td>
<td>(b)</td>
<td>177</td>
<td>Team aspects, difficult patients, dental suppliers, interference private and professional life, external regulations</td>
<td></td>
</tr>
<tr>
<td>DiMatteo et al.</td>
<td>1993</td>
<td>USA</td>
<td>67%</td>
<td>108</td>
<td>Receiving little respect by patients, lack of time for professional development and contact with colleagues</td>
<td>Having experienced professional stress Before colleagues</td>
</tr>
<tr>
<td>Bourassa &amp; Baylard</td>
<td>1994</td>
<td>Can</td>
<td>52%</td>
<td>1332</td>
<td>Difficult or dissatisfied patients, time pressure, medical emergency, financial matters, unfavourable prognosis, management, work pressure</td>
<td>Less stress with higher age</td>
</tr>
<tr>
<td>Chambers &amp; Eng</td>
<td>1994</td>
<td>USA</td>
<td>47% / 30%</td>
<td>204 / 141</td>
<td>Management, staff problems, difficult patients, technical problems, associateship, irreversibility of work</td>
<td></td>
</tr>
<tr>
<td>Kress et al.</td>
<td>1995</td>
<td>USA</td>
<td>24%</td>
<td>382</td>
<td>Team aspects, dissatisfied patients, HIV infection risk, overhead costs, external regulations, bad work / unethical behaviour by other dentists</td>
<td></td>
</tr>
<tr>
<td>Lievens</td>
<td>1995</td>
<td>B</td>
<td>(a)</td>
<td>162</td>
<td>Time pressure, work in the evening, unpredictability of work pressure, telephone disturbances, difficult patients, physical proximity, physical pressure, negative market expectancy</td>
<td></td>
</tr>
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<th>Author(s)</th>
<th>Year</th>
<th>Countr.</th>
<th>Resp. rate</th>
<th>Nr. of resp.</th>
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<th>Major person related factors</th>
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</thead>
<tbody>
<tr>
<td>von Quast</td>
<td>1996</td>
<td>D</td>
<td>(b)</td>
<td>473</td>
<td>Amount of work, medical emergencies, unpredictability of work pressure, management, administration, team aspects, difficult patients, concentration, difficult surgery, extractions, interference private and professional life, competition, negative professional image, conflicts within profession</td>
<td></td>
</tr>
<tr>
<td>Newton &amp; Gibbons</td>
<td>1996</td>
<td>GB</td>
<td>(a)</td>
<td>28</td>
<td>Time pressure, management, difficult patients, working for NHS</td>
<td>Inadequate coping Styles</td>
</tr>
<tr>
<td>Burke et al.</td>
<td>1997</td>
<td>GB</td>
<td>(b)</td>
<td>393</td>
<td>Premature retirement</td>
<td>Health problems</td>
</tr>
<tr>
<td>Kay &amp; Scarrot</td>
<td>1997</td>
<td>GB</td>
<td></td>
<td>72%</td>
<td>427</td>
<td>High levels of alcohol consumption</td>
</tr>
<tr>
<td>Waddington &amp; Humphris &amp; Cooper</td>
<td>1997/1998</td>
<td>GB</td>
<td>(a)</td>
<td>10</td>
<td>Changes in practice management, dissatisfied patients, team aspects, financial matters, amount of patients</td>
<td></td>
</tr>
<tr>
<td>Wilson et al.</td>
<td>1998</td>
<td>GB</td>
<td></td>
<td>82%</td>
<td>667</td>
<td>Time pressure, difficult patients, external regulations (NHS)</td>
</tr>
<tr>
<td>van Rossum</td>
<td>1998</td>
<td>NL</td>
<td>(d)</td>
<td>1184</td>
<td>Amount of work, time pressure, administration, staff inadequacy, defaulters, patient attitudes, hygiene, external regulations</td>
<td></td>
</tr>
<tr>
<td>Baldwin et al.</td>
<td>1999</td>
<td>GB</td>
<td></td>
<td>77%</td>
<td>183</td>
<td>Time pressure, working for NHS</td>
</tr>
</tbody>
</table>

(a) Interview series  
(b) Response rate not calculated: archive research / workshop participants / hand-outs at conference / panel discussions / etc.  
(c) Dentists and other staff  
(d) Data from several surveys taken together
Practice management

Starting and maintaining a dental practice is a key stressor among dentists. Dentists may have difficulty with the business aspects needed, such as administration, or with the co-ordination of teamwork. Sometimes the distinction between staff or business management is not so clear, and is responsibility in general considered to be a main stressor. Staff relations often are a worry for dentists. In particular staff inadequacy is mentioned, or contracting good staff. Apart from staff aspects, the organisation of one’s practice is not always optimal, such as stress from telephone disturbances. Recently, dentists also indicate having difficulties with changes in practice management and the system of remuneration for providing dental care.

Patient relations

Difficulties in patient relations is one of the major stressors for dentists. For example, in one study this factor was mentioned by 75% of the respondents. The reasons for these difficulties are varying: too late or non-appearance by patients, non-compliance during treatment, difficulties in the relationship in general, an unfavourable image of the dentist by patients, “neurotic”/fearful / difficult patients, angry patients, difficult children, defaulters, (risk of) patient complaints / dissatisfied patients, physical proximity of the patient, demanding patients, patient expectations, aggression, or changes in patient attitudes. Men seem to have more trouble with difficult patients than women clinicians.

Inflicting pain or fear

A particular aspect of dentistry, the one that the dentist probably is associated with most frequently by patients, is the possibility of inflicting pain during treatment. This is not only creating stress among patients, but also dentists may have difficulty with this aspect of their work. In some cases, when pain is experienced as a major topic by the patient, but not by the dentist, it gives food for possible conflict by lack of reciprocal understanding.

Medical-technical aspects

Apart from fear and pain, other medical – technical aspects may be stressful. Again, there is a large variety of factors mentioned: the mental strain and concentration needed for dental work, technical problems, medical emergencies, the possibility of making mistakes, ineffective anesthesia, treating a complex case with unfavourable prognosis, proceeding to a difficult unexpected operation, conflict with dental material suppliers, irreversibility of dental intervention, difficult surgery, extractions, risk of infection, maintaining practice hygiene, and in particular hygiene measures in prevention of HIV-contagion. A positive finding is that most of
the recently graduated participants in one study felt quite secure about their medical-technical abilities.8

Interference of work and private life
Especially when there is the need to obtain a high income, working as a dentist can greatly interfere with private life.28 But also pressures from work in general can interfere appreciably in the clinician’s private life.25,36 In one study it was found that women have more difficulty keeping private and professional lives separate than men.27

Physical pressure
Although much is known about the physical pressure a dentist has to confront41,42, surprisingly few studies mention the interaction between mental and physical stress.10,17,41 In one study it was found that women suffered from physical pressure more than men.27

Economical pressure
As alluded to already above, among dentists, economical pressure is often experienced.10,12,13,22,43 Sometimes the overhead costs of running a practice are explicitly mentioned.37 In other studies growing competition among dentists is felt as an economical pressure.25 The attempt at managing and living with a heavy financial burden is also reported.24

Regulations and restrictions
Further pressure results from regulations and restrictions. These regulations may cause stress mainly because of the financial consequences26,36,38, but often the annoyance is not described in a detailed way, and may have to do with the psychological frustration of being a free entrepreneur in a highly regulated field of health care.10,19,26,37,43 In the U.K., for example, working for the National Health Service has been identified as producing measurable and extensive pressures.21

Future perspective
Looking at the future, dentists vary in their opinion. In one study, dentists tended to be either positive or negative in their perspective of the amount of restorative work, professional autonomy, and economical perspectives.44 In another study, rather negative market expectancies were registered.17 In yet another study, it was found that almost one-fourth of the respondents thought of themselves as being under more stress than colleagues, while one-third experienced more stress than ten years previous.10 Realising that one is trapped in practice until retirement appeared to be a substantial stressor.38 A lack of career perspective, due to the routine and monotonous nature of the work, was found to be more stressful among men than among women.27
Dentistry in society
Some stress is caused by the feeling of being undervalued\textsuperscript{38}, or not receiving sufficient respect from the public.\textsuperscript{40} Also, the diminishing status of the dentist in society and the negative image that exists of the profession is felt as a source of stress.\textsuperscript{25} In one study, 75\% of the respondents believed dentistry to be more stressful than other occupations.\textsuperscript{10}

Colleagues
A final source for stress that should be mentioned as a work characteristic, are dentists themselves. Apart from possible competition, as already mentioned, inferior work completed by other dentists and being confronted with by patients, is a frequently occurring reason for vicarious shame.\textsuperscript{37} Similarly, unethical behaviour by colleagues has been rated as a stressor.\textsuperscript{37} Another collegial aspect that has been mentioned are conflicts with the dental association.\textsuperscript{25}

2.3.1.2 Lack of resources
A further set of stressors have been identified in the literature that can be classified under the heading of poor resources held by the individual themselves. The presence of certain person related attributes may intermediate the influence of work demands on stress, thus either increasing or decreasing one’s vulnerability.

Type A personality
Many dentists are characterised by a so-called type A personality.\textsuperscript{13,15,20,28} Type A includes behaviour such as: competitiveness, ambition, becoming easily frustrated and irritated, and hostility. In particular hostility is believed to play a crucial role in the development of cardiovascular diseases.\textsuperscript{45}

Idealism
In one study idealism was mentioned by 38\% of the participants as a stress factor.\textsuperscript{8}

Perfectionism
If there were one trait that would characterise a dentist, it would be perfectionism. Striving for perfection when dealing with - not so perfect - people as objects is a major source of frustration.\textsuperscript{10}

High anxiety disposition / emotional instability
In a few studies it was found that those dentists with a high anxiety disposition, or with general emotional instability, were identified as exhibiting higher stress levels.\textsuperscript{12,13,15}
**Imbalance between emotional investment and outcome**
An interesting person related aspect is that dentists with higher stress levels had a negative evaluation of the emotional balance between what they invested in their work and what they gained.\(^{22}\) This is in line with the social psychological equity theory which states that this negative evaluation explains differences in work stress or burnout, especially when one is confronted with comparable others who seem to invest less and gain more.\(^{7}\)

**Lack of management capacities**
Given the large amount of stress that practice management causes, it is surprising that little preparation, if at all, is given at dental school. Apart from that, most dentists do not have the ambition to be a manager, but feel forced to become one, meanwhile preferring to be dental – technical givers of care in the first place.\(^{38}\)

**Lack of communication skills**
As with practice management, dentists, certainly the older ones, hardly have any training in social skills at dental school. Many do not realise that dentistry is not only working with teeth, but most of all working with people.\(^{38}\)

**Previous stress**
As is known from other occupations, having experienced stress previously is a predictor for future work stress. Among dentists, this is not different.\(^{23}\)

**Inadequate coping style**
Coping style refers to the typical approach an individual shows (for instance: passive, or active, or avoiding) while trying to deal with the insidious effects of a stressor. In general, across many occupational groups, differences in stress can be explained by inadequacy in coping style. Several authors found this to be true for dentists too.\(^{18,29,30}\)

**Disappointment in expectancies**
An area that has received little research attention is the individual’s expectancies when entering the profession. In a study among dentists who left the profession prematurely, disappointment in the expectations from their job appeared to play a major role.\(^{43}\)

2.3.1.3 Costs
Some authors claim that dentists express their work stress most frequently in emotional terms, followed by physical and intellectual cognitive complaints.\(^{9}\) Social interaction is supposed to be least affected by work stress. When dentists pass the age of forty, however, physical complaints become the major
complaint. One author noticed that male dentists tended to react to stress by seeking pharmacological help more often than women.\textsuperscript{27} In one study, it was reported that twenty to forty percent of the dentists always or frequently met with one or more of the following complaints: feelings of worry or anxiety, physical or emotional exhaustion, eating problems, irritation and anger, depression, and also headaches and back pain.\textsuperscript{46} Physical and health complaints were also registered in other studies.\textsuperscript{15,36} In the first study, more mental problems were found among those with higher stress levels.\textsuperscript{15} Although the relation with stress was not investigated but suggested, in a Dutch study among four self-employed professions in health care, it was found that dentists had a lower risk of disability because of low back pain than physical therapists and veterinarians, but a higher risk than physicians.\textsuperscript{47} Among Dutch dentists working at a dental school clinic, higher blood pressure was registered while working in comparison with sleep or leisure activities.\textsuperscript{48} In another study, negligence, experiencing less personal accomplishment, worrying about work, feeling weak, and tense muscles were found to be personal stress reactions among dentists.\textsuperscript{25}

\subsection*{2.3.1.4 Prevention or cure}

In none of the studies identified, an effort was made to measure the effect of curative (or preventive) interventions while being under stress. Some insight, however, can be gained from studies that measure self reported coping styles by dentists. In a Swiss study it was found that the three coping styles most often used are: trying to get control over the situation, positive cognitive self instruction, and controlling one’s reaction.\textsuperscript{14} In a British study it was concluded that dentists were in need of learning more effective coping styles and should receive more assistance from professional organisations.\textsuperscript{18}

\subsection*{2.3.2 Professional burnout in dentistry - empirical evidence}

A chronological overview of empirical studies on burnout among dentists is given in Table 2.2. In this section, the findings will be presented by topics as part of the burnout model. Only a small number of studies presenting empirical data on burnout among dentists in general practice has been published. The focus of these studies was rather diverse, aiming at either information on incidence or burnout levels among the population, or aiming at work circumstances or personal characteristics associated. A brief overview of the studies will be given, presenting the main conclusions.
Table 2.2 Overview of research reports on burnout among general dental practitioners

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Cntr.</th>
<th>Resp. rate</th>
<th>Number of resp.</th>
<th>Major job related factors</th>
<th>Major person related factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>St-Yves et al.</td>
<td>1989</td>
<td>Can</td>
<td>41%</td>
<td>82</td>
<td></td>
<td>External locus of control</td>
</tr>
<tr>
<td>Murtomaa et al.</td>
<td>1990</td>
<td>SF</td>
<td>58% (♂) 68% (♀)</td>
<td>230</td>
<td>Uncomfortable working position, pace of work, physical working environment, difficult patients</td>
<td>Unhappy marriage (among men), younger age</td>
</tr>
<tr>
<td>Slate et al.</td>
<td>1990</td>
<td>USA</td>
<td>?</td>
<td>49</td>
<td></td>
<td>Little professional experience, few years of marriage</td>
</tr>
<tr>
<td>Osborne &amp; Croucher / Croucher et al.</td>
<td>1994/1998</td>
<td>GB (a)</td>
<td>77% (a)</td>
<td>340</td>
<td>Solo practice, &gt; 3 working days per week in practice, working for NHS</td>
<td>Being unmarried, little professional experience, status within practice, age, urbanisation of community</td>
</tr>
<tr>
<td>Die Zahnarzt Woche</td>
<td>1996</td>
<td>D (b)</td>
<td>&gt; 2200</td>
<td></td>
<td></td>
<td>Little capacity of introspection and expression on emotional level</td>
</tr>
</tbody>
</table>

(a) Data partly from educational meetings, partly from postal samples
(b) Respondents filled in questionnaire in professional weekly journal
2.3.2.1 Burnout - incidence

In a study in Arkansas in which the MBI was used, it was found that 6% of the responding dentists had a high level of burnout.\textsuperscript{49} It appeared that these dentists were relatively young with little professional experience. Whether this study was representative for the local dental population is not easy to assess as no information on subject selection or response rate was reported. In a study among dentists from the south-east of England, using the MBI, it was found that 10.6% had “a high general level of burnout”\textsuperscript{50} Scores in both the upper tertile of emotional exhaustion and depersonalisation and in the lower tertile of personal accomplishment determined this qualification.

2.3.2.2 Burnout - levels and dimensions

In the Arkansas study, it appeared that levels of emotional exhaustion and depersonalisation were higher among the younger dentists.\textsuperscript{49} Diminishing personal accomplishment played no significant role among those who did have unfavourable scores on the other two dimensions. In a Finnish study, diminished personal accomplishment seemed to play no role either.\textsuperscript{51} In this study the MBI was used, but by means of factor analysis reformed into three new scales: psychological fatigue, loss of job satisfaction, and “hardening” (referring to a decrease in empathy and personal involvement with a patient and apparently quite similar to depersonalisation). In the south-east England study, higher levels of emotional exhaustion and depersonalisation were found, when compared with manual reference groups.\textsuperscript{50} On personal accomplishment, however, the dentists had more favourable scores.

2.3.2.3 Burnout - associated factors

In Canada, the relation between burnout and a dentist’s external locus of control was studied.\textsuperscript{52} This refers to the tendency to experience little influence upon situations, as opposed to an internal locus of control where one does experience influence. Using the MBI, a clear relation was found between externality and the burnout dimensions emotional exhaustion and personal accomplishment. Given the cross-sectional design of the study, no causal inferences could be made.

In Finland, it was found that although most dentists reported to suffer from fatigue, they still experienced a large degree of job satisfaction.\textsuperscript{51} There was no difference in burnout levels among solo practitioners or those working in a health centre. Difficulties with patient relations, aspects of the dental office, and an uncomfortable working posture were factors most strongly related to burnout.

In the south-east England study, dentists working in a solo practice and those working four days or more per week showed greater levels of emotional exhaustion.\textsuperscript{50,53} Dentists with more years of experience, unmarried, and with a
greater proportion of their work with (British) National Health Service (NHS), showed more depersonalisation. Whereas dentists with favourable personal accomplishment scores tended to be those who worked less for the NHS and who frequently participated in post graduate courses. 

In Germany, the weekly dental paper *Die Zahnarzt Woche* had a series on burnout among dentists.\(^{54}\) The MBI was not used, nor any other established burnout measure, which makes comparison difficult. The subjects were dentists who filled in and returned a form enclosed in the paper, thus limiting the possibility to generalise the data to all dentists. Nevertheless, the information gives insight into a variety of mainly personal factors associated with burnout among the German respondents. Those with higher burnout levels had the following personal characteristics: little responsiveness for positive feedback from others, little capacity of estimating one's own talents and successes, little attention for one's own needs, difficulty in making compromises, always worrying about work, difficulty in saying "no", living for other peoples needs too much, social isolation, and hiding of personal feelings. Symptoms also found among the dentists with higher burnout levels were: fatigue, agitation about increasing influence of government and other external bodies, annoyance about patients, feelings of guilt, forgetfulness, and difficulties in concentration.

2.3.2.4 Burnout – prevention

With regard to burnout prevention, it can be concluded, as was done before by Humphris\(^ {55}\), that where empirical studies on burnout prevention among occupations in general are sparse, studies on burnout prevention in dentistry do not exist at all.

2.3.3 Evidence for the burnout model

The burnout model as was depicted in Figure 2.1 is only partly filled in by outcomes of empirical studies on stress and burnout among dentists (Figure 2.2). As far as work demands are concerned, it is evident that most important aspects have been identified. About lack of resources, or intermediating factors in a broader sense, not much was investigated. Mainly some personality related factors have been identified. About costs, not too much was investigated either.

The current knowledge is, in the absence of a better alternative, based on stress research among dentists to a large extent. The actual relationship with burnout is not yet confirmed. In order to refine the picture of burnout related factors, some information on dentists outside general practice was also obtained.
2.3.4 Professional burnout in dentistry – other studies

Apart from studies among general dental practitioners, burnout has been studied among dentists working in different settings several times. Since these studies may be helpful in creating the right picture of burnout among dentists, a brief presentation follows.
**Dental schools**
As far back as 1984, the *Journal of Dental Education* devoted an issue to the burnout topic. In one study, in which the MBI was used, it was found that among teachers at dental school risk factors for burnout were: about ten years of professional experience, teaching at the dental school clinic, having a private dental practice in addition, and possessing a large number of student contacts. Mean scores of the teachers were favourable when compared with American normative data. One author reported that, when compared with other faculties, dental school teachers were the ones who took “sabbatical leave” the least. A period of sabbatical leave, having variety in work, and taking time for reflection, were all ingredients for burnout prevention, according to one author. Another author stated that participation in faculty decisions is a factor that may prevent teachers from burning out. Also, not teaching full time would be helpful. The opinion offered was that working in a faculty should create more energy for working in private practice, and outweigh the costs required to complete the job.

In a study among teachers in dental hygiene, also using the MBI, it was reported that the number of years at the faculty and academic status were somewhat predictive of burnout levels. Overall, mean levels of burnout among the dental hygiene teachers were favourable when compared with both standard scores and dental teachers’ scores.

In a study among junior staff at an English dental school, using the MBI, it appeared that 9.5% had “high general levels”. Mean levels of the teachers were to be labelled “medium”. Among teachers in restorative dentistry and oral surgery, patients who frequently came for treatment seemed to play some role in the development of depersonalisation.

In one study burnout was described from the students’ perspective. It appeared that first year dental students did not differ in burnout levels from students at other faculties.

**Military dentists**
One study was identified on burnout among dentists working in military service. This study was conducted at a large American base, and the MBI was used as a measure. Mean levels of burnout among military dentists, almost all male, appeared to be favourable when compared with standard scores.

**2.3.5 Stress and burnout in dentistry – subjective views**
On stress among dentists, numerous awareness raising publications appeared. The earliest identified dental publication with a title referring to work stress comes from the late sixties. Other publications may have preceded. The first identified example of a dental journal article with burnout in the title was from the second half of the seventies; not too long after the burnout concept was first introduced in a scientific context. Since those years, a large number of
articles on stress and burnout in dentistry has been published. Some publications are comprehensive, covering many aspects of the subject. It is impossible to fully cover the richness of the opinions, views, and advice given by so many authors of different backgrounds in this review. Therefore, the major points made by these authors will be mentioned, with the aim to further complete the ingredients of the model on burnout as described in Figure 2.2. Many of these articles reward further reading, since, in their descriptive character, they contain useful insight in the process of becoming stressed or burned out in dentistry. Alternatively, caution is required as an author’s personal opinion may be taken as representative for the profession. Only rarely do authors question the particular stressfulness of dentistry. In one exception the relative good access to stimulating resources and opportunities that a dentist can enjoy is emphasised.

In the only contribution identified on burnout among dental specialists, namely endodontists, the author states that burnout does not seem to be a core problem, although chronic stress is clearly recognised among those specialists. On the other hand, some authors give the impression to exaggerate the risks with alarming titles such as: Stress in dentistry – it can kill you! Hardly ever is “healthy” self-mockery traced. However, the remark that “…the growing amount of publications on stress in dentistry has become a stressor in itself…” contains a nice example of (typically British?) humour. This section is also built up along the factors that are part of the burnout model. Once again, the model is loosely applied to incorporate the factors identified in the literature.

2.3.5.1 Demands

Time pressure
Time pressure as a source for stress is well-recognised, as could also be seen in the results of empirical studies.

Work pressure
Work pressure consists of a variety of things: constantly having to make decisions, changes in looking in and outside of the mouth, the demanding character of the profession, limited working area in physical and spiritual sense, the necessity of making compromises to perfection, the number of patients, bad working conditions, physical pressure, routine, solitude, little emotional rewards, being locked in a room with no possibility for expression, responsibilities, worrying about the necessity to keep up with developments, technical difficulties, routine / boredom, work load, ergonomically aggravating work environment, emergencies, and keeping up knowledge.
Relationships with patients
A potential major stressor has been raised by many authors, namely: poor relationships with patients. For instance: demands of anxious patients, lack of compliments for good work and easily given negative feedback for mistakes - a maximum effort for minimal reward, patients declaring negative feelings about dental visits, being regarded as the inflictor of pain, patient fidgeting and movement during treatment, resistance to treatment plan, unfavourable perception by patients, having to adopt different social roles simultaneously.

Management
Management obligations often are difficult to meet. They also vary: telephone disturbances, reception management, role ambiguity in simultaneously being employer, co-worker and husband towards the same person, lack of social support, practice management, staff conflicts, or administrative tasks.

(Dental) Society
The place of dentistry in society is changing. Moreover, there are changes in dental institutions and organisations. Some aspects referred to by authors are: negative image in society, social isolation, low status, changes in society and in the profession with regard to health education, quality improvement, patient attitudes, etc., increase in group practices that may decrease controllability for the individual dentist, changes in dental structures, and professional isolation.

Financial pressure
Finances play a central role in dental practices. Their role in work stress is therefore well understood: economic pressures, costs, or financial matters, including financial conflicts, have been reported. Also the lack of financial career development has been described.

2.3.5.2 Lack of resources
Several authors describe the stress prone dentist as the type A personality. According to one author, the dentist, as a child, often was brought up as a competitive person, aiming at success, with no attention from the parents for the inner emotional needs of the child, which is claimed to be the basis for type A personality. Personal characteristics that add to this picture and which once or more often have been mentioned are: ambition, always hard working, high need for respect, greediness, competitiveness, worrying about time, not being able to forget injustice from the past, independency, need for control, and the tendency to always do more by one self.
Other aspects that are believed to contribute to stress proneness and that are often observed among practising dentists are: perfectionism\textsuperscript{66,74,75,79,80,84,87,88}, conscientiousness\textsuperscript{74,75}, need for recognition\textsuperscript{84}, fear for conflicts\textsuperscript{77}, inflexibility\textsuperscript{66}, rigidity\textsuperscript{79,80}, authoritative type\textsuperscript{66,79,80}, conservative attitude\textsuperscript{66}, and lack of self confidence.\textsuperscript{66} One author explicitly observes an alcohol addiction proneness.\textsuperscript{83}

Some dentists find it hard to communicate and experience negative interactions with patients.\textsuperscript{89} As a contrast, sometimes too close personal or even inappropriate sexual relationships with staff or patients may become stressful for dentists.\textsuperscript{74,75} Worries about regular patients with whom one has build up a relation but who are reluctant in paying are experienced as very frustrating.\textsuperscript{87,88}

In general, incorrect assumptions about the relationship with patients, such as: “I have to be respected by all my patients”, “I have to be emotionally affected to my patients”, “for every patient there is always a perfect solution”, can place a heavy burden on the work.\textsuperscript{90} Personal “beliefs” and expectations in general about the profession that turn out differently often are cause for much disappointment.\textsuperscript{91} A wrong career choice is sometimes recognised, but it is found hard to change direction or profession.\textsuperscript{66} Apparently, dentistry is sometimes regarded as a second choice to the medical profession, and during a professional career one may realise that one possesses many more capacities that cannot be exploited in dentistry.\textsuperscript{82} Boredom is a serious pitfall in the profession that may cause burnout.\textsuperscript{87,88,92} Apart from being a dentist, job stress or burnout may also be part of a general (mid-)life crisis\textsuperscript{76,93}

Special attention should be paid to psycho-dynamic aspects of dental work, for instance dealing with anxious patients who may identify the dentist with significant others, or meeting parental expectations in reference to vocational choice.\textsuperscript{94} Transference and counter-transference between dentist and patient from a psycho-dynamic perspective, as well as other attitudinal confrontations, including sexual references of working in the mouth, require an awareness of one’s personal psychological growth.\textsuperscript{95}

In fact, many more personal variables in combination can be mentioned that may contribute to stress and burnout: personality, previous experiences, family life, life events, daily hassles, general health, social support, social roles, psychological needs, individual attitudes and beliefs.\textsuperscript{72} Whether dental or personal variables are responsible for the occurrence of stress is perhaps a naive question. Of greater importance, as was explained in the introduction of this paper, is the interaction of certain demands of the environment and the coping capabilities of the individual. The effectiveness of a dentist’s coping style in given situations can be put forward as a crucial factor in the development of stress and burnout.\textsuperscript{92,96,97}
2.3.5.3 Costs

Apart from burnout, which can be regarded as a consequence of chronic occupational stress itself, some other personal consequences of working in a stressful dental practice have been mentioned regularly: ceaselessly feeling stressed \(^{70,85}\), alcohol or drugs addiction \(^{70,74,75,85,93}\), depression \(^{74,75}\), coronary diseases \(^{70}\), divorce \(^{85,93}\), social isolation \(^{93}\), and even suicide \(^{70,74,75,85}\). In order to deal with stress, dentists sometimes choose “false cures”: detachment, cynicism, denial, depression. \(^{84}\) It could also be considered a false cure when taking more patients should fulfil financial satisfaction when the limited contents of dental work fail to satisfy. \(^{81}\)

Generally, two opinions exist: the one that claims that dentistry is extremely stressful and has serious effects on many dentists, versus the one that states that in every profession you will find aspects that may be stressful to some of its participants. \(^{98}\) Only occasionally publications will be found that emphasise the fact that most dentists are found to be healthy, and that there is no proof that the profession is worse off than others. \(^{68,99}\)

2.3.5.4 Prevention or cures

Contrary to the empirical studies on stress and burnout, where no examples of prevention were found, among the more subjective contributions a large amount of advice and opinion is available that describe possibilities for prevention or cure.

Education

Dental education is often mentioned in a negative sense. No example was found of a dental school that prepares its students explicitly on the stress of practice. Several authors state that dental schools should anticipate bottlenecks and risks of the profession. \(^{76,96,100-102}\) Also, it is stated that dental students should not only be taught to be perfect, but should also be offered emotional attention and should be encouraged to talk about their worries. \(^{82}\) Burnout is seen as basically caused by incorrect expectations that have not been readjusted during education. \(^{103}\) Attending post graduate education is considered a means to prevent or reduce burnout. \(^{86,96,104}\) A quite important aspect was brought forth recently, namely whether dental schools are capable to select for vulnerability for stress, and if, whether they should. \(^{94}\)

Social support

Social support is a prevention measure that one does not automatically generate in the dental office, therefore one has to actively create it. \(^{66,76,86,96}\) For example, by organising regular social meetings among colleagues \(^{81,105}\), by taking time for family life \(^{66,87,88}\), or taking a companion in practice. \(^{106}\)
Social skills
Increase of social or communication skills will decrease a negative image by patients, which in turn relieves dentists from the pressure of this negative image. Taking more time per patient increases the possibility of also receiving positive feedback. The skill to express one’s own doubts more freely will stimulate understanding of patient’s fears and reciprocal understanding by the patient. Improving staff communication, and attention for the emotional needs of the staff, including one’s own, is needed. By relieving patient anxiety, by learning persuasion skills, and by establishing mutual respect much tension in interpersonal contact can be overcome. Much stress comes from misunderstanding in communication because of differences in perception. Knowledge about people and behaviour may also help. Learning alternative reaction patterns for recurring problem situations can also be understood as improvement of social skills. Although not strictly a social skill, appropriate social – emotional oriented coping techniques are considered to be especially helpful. Adequate coping styles should be found to manage stress, because a particular source of stress may not be the central problem, but merely the way stress is being handled.

Cognitive measures
On a cognitive level, much progress can be achieved. As Shakespeare wrote in Hamlet: “There is nothing good or bad but thinking makes it so”. A healthy self esteem is regarded as a starting point for good mental health. Erroneous assumptions and unrealistic self expectations will almost certainly result in stress when standards cannot be met. Change is to be seen as a purpose in itself, as a process, but not as an end; “ideal” is something that is sometimes achieved but not continuously, and more acceptance of who one is and what one can gives satisfaction. Other measures are: humour and learning to put things in perspective, identification or recognition, reflection on who one is and how one works, and a reformulation of perceptions. Cognitive re-labelling of stressors helps relieving the burden and experiencing more control. The ability to control is something that may relieve stress, and more control is experienced when one takes very practical measures.

Planning and practice management
On the management side, much improvement can be made in planning in a dental office. For instance, by avoidance of annoying work, by more variety in work, by better time-management, or by other management skills. Changes in practice from time to time, such as changing responsibilities in the staff, to be practised by cross discipline training, are means of increasing control and therefore prevention of burnout. Setting goals for the practice and working on these goals as a team is also challenging.
Special therapies
Several therapeutic activities have been advised for dentists suffering from stress. Relaxation is considered important, both directly for the dentist, and indirectly because patients will feel more at ease which in return is beneficial for the dentist. Bio-feedback has been suggested, as is counselling, or psychotherapy.

Other possible measures
Apart from the points mentioned, a wide diversity of different measures has been described: more balance in professional and private life, alcohol addiction guidance, time out from work, thus taking some distance from practice in a literal sense, specialisation in dentistry which prevents from lack of challenge, writing a stress log, limiting practice size, limiting financial debts, dispense with a remuneration system that encourages high production, setting goals in accordance with personal interest and regular reset of these goals, or professional advise. Prevention should be aimed at physical, emotional, cognitive and behavioural responses. Taking responsibility and estimation of what is and what is not changeable, are means to prevent burnout. Burnout can have a positive side when one learns in this period to differentiate between what is important and what is not. Other individually different stress relievers mentioned by authors are: music, diet, leisure activities that take the thoughts from practice away, making lists of things to do, taking care of one’s health, self observation through audio or video tapes, or better coping strategies. For dentists approaching retirement, there is no need to continue full speed; part-time dentistry at this stage usually is as beneficial as any other job done in full time. An increasing sense of control of changes is needed. Ergonomic preventive measures create room for more pleasure in work. Better career planning, as well as a healthy life style in general are additional sources of advice. Since absolute measurement of dental stressors is not possible because of subjectivity, threat perception is a fruitful principle in stress management.

Structured initiatives
At this point, special reference should be made of some examples of organised preventive attention that have been developed for the dental profession. “Hotline referral services” by telephone have been established in some countries, in order to help dentists find a qualified professional therapist when needed. When organised, often much help is focused at alcohol or drugs abuse, but also stress relief has become part of the service. From Canada, the Dentists at Risk activities can be mentioned, as well as the service from the Members’ Assistance Program of the Canadian Dentists’ Insurance Program. The latter program, a telephone assistance service for personal problems, was initiated by an insurance company as a preventive measure. In the United Kingdom, the Sick
Dentist Scheme\textsuperscript{111,129}, and in the United States, In Touch – Dentist Well-Being Program (bulletins are spread regularly to subscribers from the ADA Council on Dental practice), are examples of dental associations taking responsibility. Only recently, in Australia, dentists have access to the services of the Doctors Health Advisory Service.\textsuperscript{94} Here also, dentists can get in touch by telephone with people who help finding specialists for particular personal needs. In The Netherlands, an insurance company for incapacitation for work has also arranged for confidential telephone referral services, but, over and above this, taken the initiative to financially support burnout prevention programs.\textsuperscript{92,100,130,131} In these programs, under guidance of career counsellors and psychologists, dentists are invited to thoroughly analyse their current practice and personal wishes, and receive support in order to bring reality and wish closer together. A study on the effect on burnout of these programs is described in chapter 9 of this thesis.

2.4. Discussion and conclusion

In this section some implications for future research will be discussed, some perspectives for prevention will be given, and conclusions will be drawn.

2.4.1 Implications for research and prevention

From the literature on dental stress and burnout that has been presented up to this point, it is clear that parts of the model from Figure 2.1 have been described extensively. A substantial description and analysis of the demands of the job has been provided for, both from empirical research and from expert opinions. More needs to be discovered about the lack of resources, as little empirical evidence exists, and many opinions have a speculative character. There is hardly any evidence-based knowledge about the costs of stress and burnout for dentistry, although, again, many opinions exist. We do not know whether patient care does suffer from burnout, whether quality of care actually diminishes, whether neglect or mistakes play any role, whether turnover, health problems, or incapacitation for work are indeed correlated with, let alone caused by burnout. On prevention or cure, not a single study was found. And finally, on incidence, risk percentages, levels, or the development in time of burnout among dentists little to nothing is known. Therefore, emphasis in future research should be put on empirical facts about burnout among dentists to start with. Possible risk factors such as combinations of age, gender, certain work characteristics, person characteristics, and the like can be explored. Antecedents of the burnout process should be measured in longitudinal research. But, most importantly, efforts should be made to intervene in the burnout process and to measure the effects. In the remainder of this section, some current views on burnout prevention will
be discussed, with the aim to stimulate initiatives that will enhance our knowledge of burnout prevention in dentistry.

2.4.2 Perspectives for prevention

Existing programs for burnout prevention, regardless of profession, are described recently by Schaufeli & Enzmann. They distinguish strategies that focus on the individual, on the organisation, or on the interface of both. The strategies range from early identification, through primary and secondary prevention, to treatment or rehabilitation. Schaufeli & Enzmann conclude that only a few well-designed studies have been conducted, from which it appears that individual based cognitive and behavioural strategies have shown some effect in reducing burnout, most notably emotional exhaustion. They encourage three elements to be a part of burnout prevention programs: 1) levels of burnout should be assessed in order to increase the individual’s or organisation’s awareness; 2) negative arousal should be reduced, for instance by using cognitive-behavioural techniques or by reducing work stressors; 3) the person-job fit should be improved, by individual and / or organisational adaptation.

With regard to this last point - a better fit - Maslach & Leiter and Maslach & Goldberg recently made some fruitful contributions. They not only described the likelihood of burnout as a function of the misfit between a person and the job – such was done before - but also defined some specific areas in which this mismatch and the accompanying disharmony would result in burnout. Six areas were described: work overload, when job demands exceed human limits; lack of control, when one does not have the opportunity to make choices or decisions; insufficient reward, both external - salary - and internal - pride – are part of this; breakdown of community, losing a sense of positive connection with others in the workplace; absence of fairness, this can be felt in inequity in work load or pay, or in cheating or injustice with regard to evaluation and promotion; value conflict, when the requirements of the job are in conflict with personal principles. Two important points that Maslach and her co-authors make are, firstly, that prevention should not only be concentrating on, for example, work overload. People may be able to tolerate great work loads if they intrinsically value their work or if they feel well-rewarded for their efforts. Therefore, prevention or intervention should target all of these areas. Secondly, much of the efforts in preventing burnout are directly aimed at diminishing exhaustion, cynicism, or inefficacy. But, burnout could be interpreted as one extreme of a continuum. On the opposite side engagement can be found, with energy versus exhaustion, involvement versus cynicism, and efficacy versus inefficacy. It is well-worth focusing preventive attention at increasing the engagement side of the continuum.
2.4.3 Conclusions

The existing literature on work stress and burnout among dentists offers an extensive amount of information on the demands of the work and the resources available. There is a great shortcoming in evidence-based knowledge of what the harmful effects of stress and burnout are, how burnout develops, to what extent the problem exists, and most importantly, how to prevent dentists from burning out. In only a few countries, dental organisations have initiated to assist in structured prevention. These initiatives mainly consist of lowering the threshold for professional counselling by personal problems. Developments in burnout theory offer models and perspectives that, so far, have hardly been made use of in dental burnout research. The challenge for both dental researchers and dental organisations is to further apply and facilitate the available understanding of burnout in the context of dentistry.
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