

Emotional Intelligence in Dental Teams at the Dental Clinic of University Medical Centre Ljubljana – A Pilot Study

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Abstract. The concept of emotional intelligence (EI) was described by Salovey and Mayer (1990) as an ability analogous to general intelligence. According to Goleman (1998), the EI consists of 4 domains: self-awareness, which involves recognising one's own emotions and being aware of how one's emotions are experienced by others; self-control, which involves the ability to regulate one's behaviour and to be thoughtful before acting; social awareness, which enables attention to the emotions of others; and relationship management, which is the ability to create, monitor and maintain effective relationships.

EI has a significant impact on professionalism in healthcare (Partido et al. 2020). In addition to knowledge, skills, safety, and quality, good medical care also requires communication, partnership, teamwork, and trust. Thus, there is a link between the EI of health professionals and good clinical practice (Dott et al. 2022). Research has found that higher levels of EI contribute positively to the patient-physician relationship, teamwork effectiveness, and communication skills. Higher levels of EI also lead to more effective coping with stress, greater organizational commitment, and better leadership (Arora et al. 2010). Furthermore, in the field of dentistry, many patient visits are associated with fear of dental interventions. Patients with fear may delay appointments and treatments, leading to deterioration of oral health (Berggren & Meynert 1984). These are additional reasons to raise awareness of the importance of EI among dentistry professionals.

Despite this, not much is known about the level of EI of dentists, nurses working in dental clinics, and other team members involved in dental care. The aim of our pilot study was therefore to measure the EI in dental teams at the Dental Clinic of University Medical Centre Ljubljana (Dental Clinic). Three research questions were posed, i.e. 1) What is the level of EI among Dental Clinic staff? 2) Are there gender differences in the level of EI at the Dental Clinic? 3) Are there differences in the level of EI among younger (under 50 years) and older employees (50 years and above) at the Dental Clinic?

The questionnaire was sent to 109 e-mail addresses of employees of the Dental Clinic. 55 (or 50,5%) valid responses were gathered. The survey was designed using the 1KA web survey software and implemented in 2023. Emotional skills and competence questionnaire (ESCQ; Taksic et al. 2009) as a self-report measure of EI was deployed. Participation in the survey was completely anonymous and voluntary.

The study showed significant differences in EI levels among the Dental Clinic staff. Higher levels of EI were found in women and, albeit non-significant, in younger participants. The results of this analysis

may serve as a basis for an in-depth analysis of EI levels and the development of raising awareness programs in the field of dental medicine.

Keywords: emotional intelligence, ESCQ, good clinical practice, Dental Clinic, University Medical Centre Ljubljana.

1 Introduction

The concept of emotional intelligence (EI) was described by Salovey and Mayer (1990) as an ability analogous to general intelligence. According to Goleman (1998), the EI consists of 4 domains: self-awareness, which involves recognising one's own emotions and being aware of how one's emotions are experienced by others; self-control, which involves the ability to regulate one's behaviour and to be thoughtful before acting; social awareness, which enables attention to the emotions of others; and relationship management, which is the ability to create, monitor and maintain effective relationships.

Emotionally intelligent people can recognise their own emotions and moods in a given situation, stay calm and rational, and decide on the best activity, thus motivating other team members to be more successful and hard-working in their jobs (Dott et al. 2022).

There are a number of comprehensive models of EI that offer different theoretical frameworks for the construct's operationalization. While these models do not necessarily conflict with one another, they do view EI from slightly different angles. Considering these conceptualizations, three different methods of evaluation are available to measure EI: ability measurement, observer/informant measurement, and self-report measurement. While self-report measures are filtered through an individual's self-concept and impression management skills, ability measures have the advantage of expressing an individual's performance level on a task (Mayer et al. 2000). Despite criticism, there are several self-assessment questionnaires to measure EI (Taksic et al. 2009).

1.1 EI in medicine

The construct of EI has become increasingly popular over the last 20 years and has gained relatively extensive academic and popular literature support (Lewis et al. 2005). EI has a significant impact on professionalism in healthcare (Partido et al. 2021). Expert knowledge and skills alone, as well as knowledge of current guidelines and doctrines of recognised methods and treatments, are not sufficient for good patient care, nor for the good functioning of the whole team involved in the patient's care, nor for the functioning and management of a healthcare organisation (Partido et al. 2021). So, the need to have the right skills and knowledge of current guidelines and doctrines and a good understanding of the methods and treatments is not sufficient for good patient care, nor for the whole team involved in the patient's care. In addition to knowledge, skills, safety, and quality, good medical and, by extension, dental care also requires communication, partnership, teamwork, and trust. Thus, there is a link between the EI of health professionals and good clinical practice (Dott et al. 2022).

Researchers have found that higher levels of EI contribute positively to the patient-physician relationship, teamwork effectiveness, and communication skills. Higher levels of EI also lead to more effective coping with stress, greater organisational loyalty and better leadership (Arora et al. 2010; Jahan et al. 2022) as well as to less fatigue among medical doctors (Liu et al. 2018). Abdali et al. (2020) and Liu et al. (2018) suggest a negative association between fatigue and EI, leading us to the conclusion that fatigue in medical staff can lead to less empathetic doctor-patient relationships, impaired capacity to deal with work-related stressors, worse sleep patterns, to less effective work relationships, etc.

EI is beginning to be discussed in the medical education literature (Lewis et al. 2005). According to research, current medical curricula and training do not appear to increase EI competence (Chen et al. 2012; Imran et al. 2013). In fact, Mahoney et al. (2016) have shown a significant deterioration in

empathy levels during medical education. In addition to formal curriculum, medical education also teaches a 'hidden curriculum' whereby medical students learn the attitudes, identities and behaviours expected of doctors (Kassam et al. 2020). In this context, emotional inaccessibility and lack of empathy are often part of this culture.

Partido et al. (2020) claim that understanding methods to improve EI levels can help dental students develop their professionalism. Hence, medical educators should explore ways to incorporate EI skills (such as reflexive practices, affect labeling, emotional regulation, and effective communication skills) into the medical curriculum (Kassam et al. 2020; Liu et al. 2018; Castro et al. 2017; Lieberman et al. 2007; Longhurst 1988). This will contribute to patient-centered practice and patient satisfaction. Additionally, developing EI will help medical staff as well, leading to more mindful and vigorous professionals. In addition, Liu et al. (2018) dealt with medical staff fatigue in their study and concluded that EI education, interventions, and training should be implemented to combat fatigue.

Not much is known about the level of EI of dentists and nurses working in dental clinics as well as among other team members involved in dental care. In the field of dentistry, many patient visits are associated with fear. Patients with a fear of dental interventions may delay appointments and treatments, leading to a deterioration of oral health (Berggren, & Meynert 1984). These are additional reasons to raise awareness of the importance of EI by healthcare professionals in the context of good clinical practice in dentistry.

1.2 Aims and Research Questions

Our pilot study aimed to measure EI of the staff at the Dental Clinic of the University Medical Centre Ljubljana. Furthermore, in line with previous research that showed gender-related differences in EI scores (women showed statistically significant higher scores; Chen et al. 2012; Imran et al. 2013; Coskun et al. 2018) we wanted to determine whether gender differences in EI levels exist in our sample. Finally, we wanted to assess age-related differences in our sample. As shown by Ravikumar et al. (2017) and Coskun (2018), age was positively associated with EI.

Based on the literature overview, the following research questions were posed in this study:

1. What is the EI level among the Dental Clinic staff?
2. Are there gender differences in the level of EI at the Dental Clinic?
3. Are there differences in the level of EI between younger (under 50 years) and older (50 years and over) participants at the Dental Clinic?

2 Methods

2.1 Participants

The questionnaire was sent to 109 e-mail addresses of employees of the Dental Clinic of the University Medical Centre Ljubljana, as well as to employees of the of the Dental Medicine Department of the Faculty of Medicine at the University of Ljubljana, who participate in the clinical work and are thus part of the dental teams at the Dental Clinic. The structure of participants is presented in Table 1.

2.2 Instruments

The first part of the questionnaire contained questions on gender, age, and occupation. In the second part, Emotional Skills and Competence questionnaire (ESCQ) was deployed. ESCQ assesses emotional "competence" rather than intelligence (Ciarrochi 2001, p. 44) to prevent misconceptions and criticism surrounding self-rating measures and their capacity to judge intelligence. ESCQ has been used and tested in different settings (academic, workplace) (Taksic et al. 2009).

ESCQ consists of 45 items divided into 3 subscales: 1) Ability to perceive and understand emotion (APUE) scale with 15 items (e.g. “*When I see how someone feels, I usually know what has happened to him*”); 2) Ability to express and label emotion (AELE) scale with 14 items (e.g. “*I am able to express my emotions well*”) and 3) Ability to manage and regulate emotion (AMRE) scale with 16 items (e.g. “*When I am in a good mood, every problem seems soluble*”). The questionnaire is a self-report measure of EI. It consists of closed-ended questions to which the respondents respond using a 5-point Likert scale (1 - true never, 2 - seldom, 3 - occasionally, 4 - usually, 5 - always).

2.3 Procedure

The survey was conducted in the first quarter of 2023. The survey was designed using the 1KA web survey software. We explained to all respondents that participation in the survey was completely anonymous and entirely voluntary. The analyses were performed using SPSS v.25 (IBM, Armonk, NY, USA) and MS Excel v.16 (The Microsoft Corporation, Redmond, WA, USA). Both gender data (Men or Women) and gender data (under 50 and aged 50 or over), were compared using t-tests for independent samples.

The normality of the distribution was calculated with the Shapiro-Wilk test, and to avoid problems due to unequal variances of the groups, we used a t-test adjusted for unequal variances. All variables were normally distributed. For both analyses (gender and age group comparisons), we performed four comparisons (eight in total), and the result of each block of four comparisons was corrected using the Bonferroni correction. All confidence intervals we report are 98.75%, considering the correction performed.

3 Results

62 (56.8%) respondents clicked on the survey link, 58 (53.2%) started the survey, 55 (50.4%) partially completed the survey, and 47 (43.1%) completed or answered all questions (Table 1). Of these, 38 (69,1%) were female, 14 (25,5%) were male, and 3 respondents (5,4%) did not answer the gender question.

Table 1: Structure of participants according to occupation group.

Occupational group	N	% of total occ. group
Administrative staff	8	100
Registered nurses	5	62,5
Mid nurses	7	29,2
Specialist dentist	22	61,2
Dental technician	4	33,3
Specialist registrar, assistant, apprentice	6	33,3
Radiological engineer	3	100
Sum	55	50,5

The age structure of participants was the following: the majority (36 participants or 65,4%) were between 30 and 49 years old. 17 (30,1%) participants were between 50 and 64 years old. One participant (1,8%) was 65 to 75 years old and one participant (1,8%) did not provide age-related information.

3.1 General EI score at the Dental Clinic

We were interested in the overall score of the participants at the Dental Clinic.

Table 2: ESCQ scores at the Dental Clinic.

	Min	Max	M	SD
Total score ESCQ	1	5	3,68	0,81
Ability to perceive and understand emotion (APUE)	1	5	3,74	0,70
Ability to express and label emotion (AELE)	1	5	3,62	0,84
Ability to manage and regulate emotion (AMRE)	1	5	4,33	1,70

Note: Min: minimum, Max: maximum, M: arithmetic mean, SD: standard deviation.

Table 2 represents general ESCQ scores in our sample. Relatively high scores for all three subscales of ESCQ were found. While the highest mean score was observed in their ability to manage and regulate emotions, participants differed the most in their answers regarding this EI ability.

3.2 Gender-related differences in EI at the Dental Clinic

We also calculated differences in EI scores among female and male participants.

Table 3. Sum of responses to questions by gender.

Gender		N	M	SD	SE	98,75% CI
Total	M	14	152	15	4	11
	W	31	171	19	3	9
APUE	M	14	54	6	2	5
	W	31	61	8	1	4
AELE	M	14	42	6	2	5
	W	31	50	7	1	3
AMRE	M	14	56	5	1	4
	W	31	60	6	1	3

Note: APUE: Ability to perceive and understand emotions, AELE: Ability to express and label emotions, AMRE: Ability to manage and regulate emotions, N: number of respondents, M: arithmetic mean, SD: standard deviation, SE: standard error, CI: confidence interval.

Comparing the results of the ESCQ questionnaire by gender shows that there are statistically significant gender-related differences in EI. Specifically, women scored higher on the overall questionnaire total as well as on all scales except for the Ability to manage and regulate emotion (AMRE) (Table 3 and Figure 1).

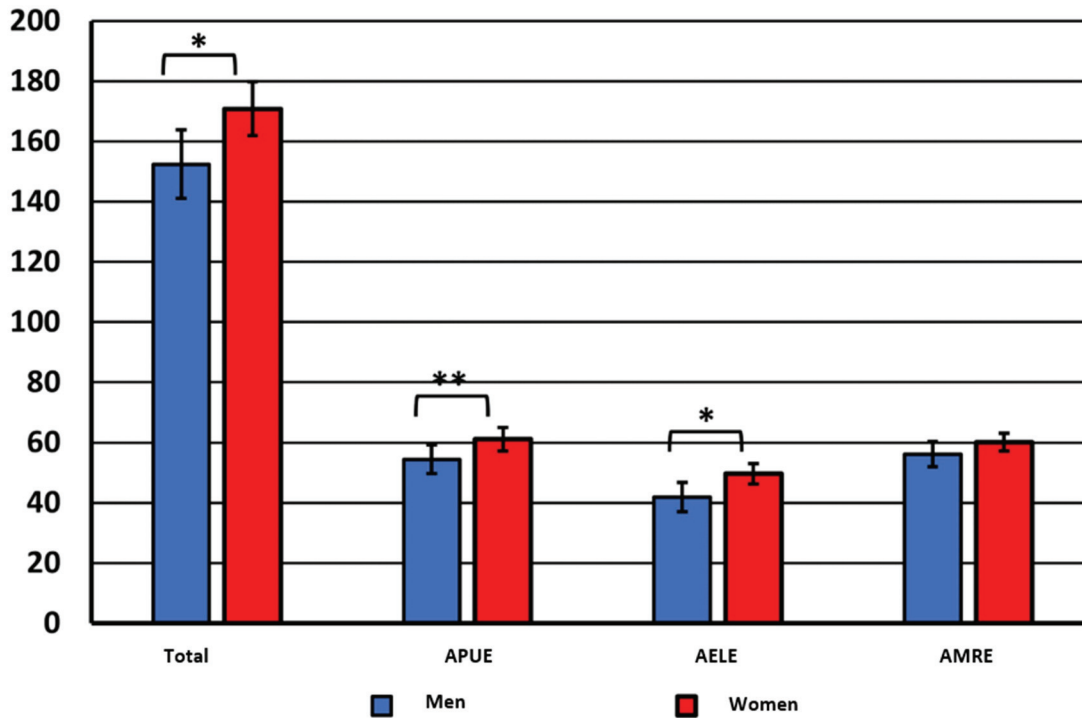


Figure 1: Comparisons in ESCQ scales by gender.

Overall results (difference in means = -18.482, $t=-3.278$, $df=43$, $*p=0.001$); and for the sets: APUE: difference in means = -6.668, $t=-3.026$, $df=43$, $**p=0.005$; AELE: difference in means = -7.788, $t=-3.673$, $df=43$, $*p=0.001$; AMRE: difference in means = -4.025, $t=-2.214$, $df=43$, $p=0.034$). The value $p<0.0125$ was chosen for the level of significance.

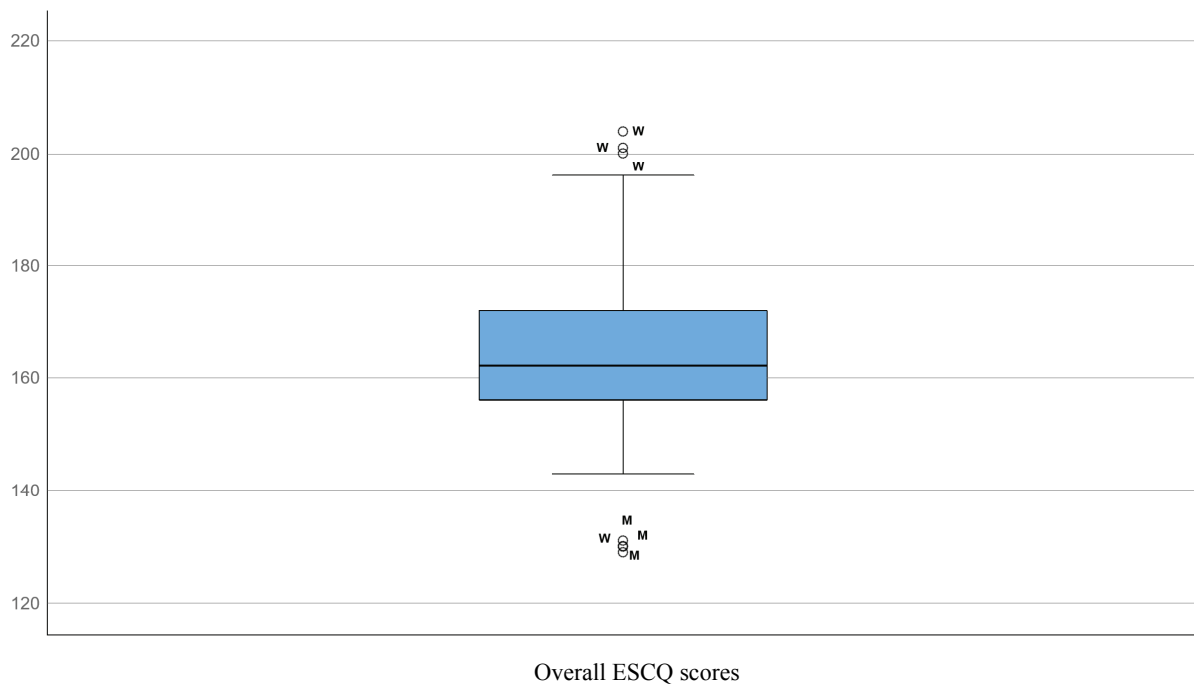


Figure 2: Box plot- overall ESCQ scores.

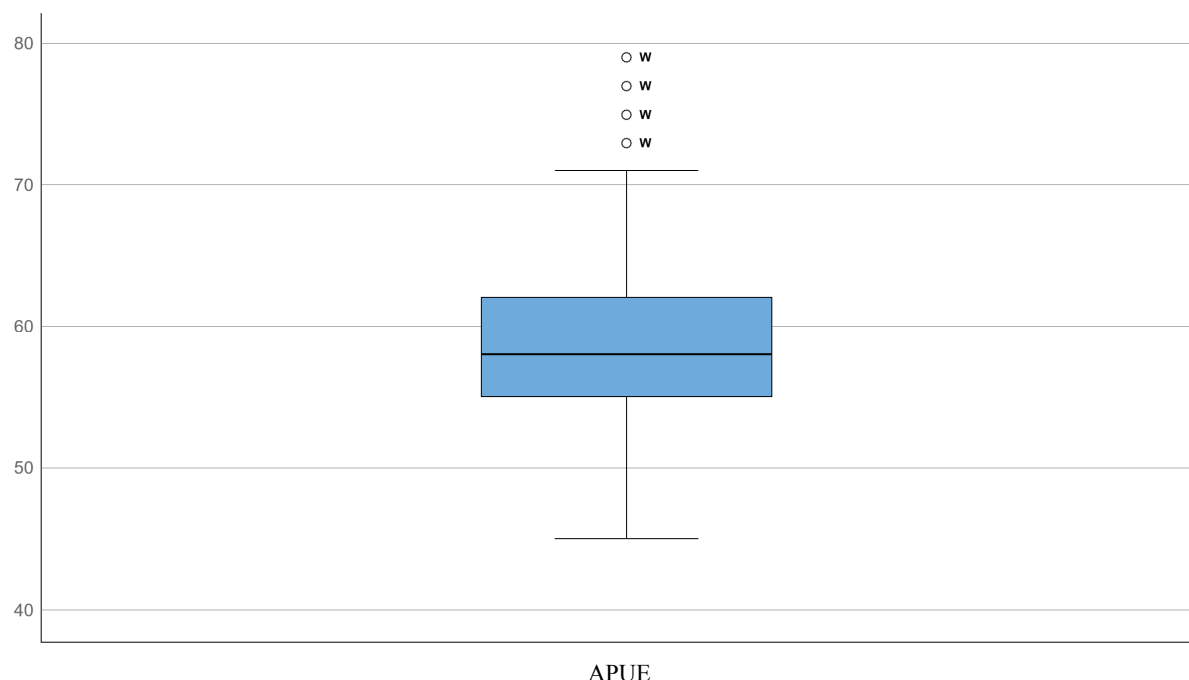


Figure 3: Box plot- result for APUE.

The box plots (Figures 2 and 3) show interesting patterns for the overall ESCQ scores and the APUE scale. In both cases, participants with the highest EI score are female, while the majority of participants with the lowest EI scores are male.

3.3 Age-related differences in EI scores at the Dental Clinic

Comparison of ESCQ scores by age group (under 50 and 50 or over) is presented in Table 3 and Figure 4.

Table 3: Sums of responses by age group (under 50 and 50 or over).

Age		N	M	SD	SE	98,75% CI
Total	<50	33	169	17	3	8
	50+	14	156	21	6	16
APUE	<50	33	61	7	1	3
	50+	14	55	8	2	6
AELE	<50	33	48	7	1	3
	50+	14	44	9	2	7
AMRE	<50	33	59	6	1	3
	50+	14	58	7	2	5

Note: APUE: Ability to perceive and understand emotions, AELE: Ability to express and label emotions, AMRE: Ability to manage and regulate emotions, N: number of respondents, SD: standard deviation, M: arithmetic mean, SE: standard error, CI: confidence interval.

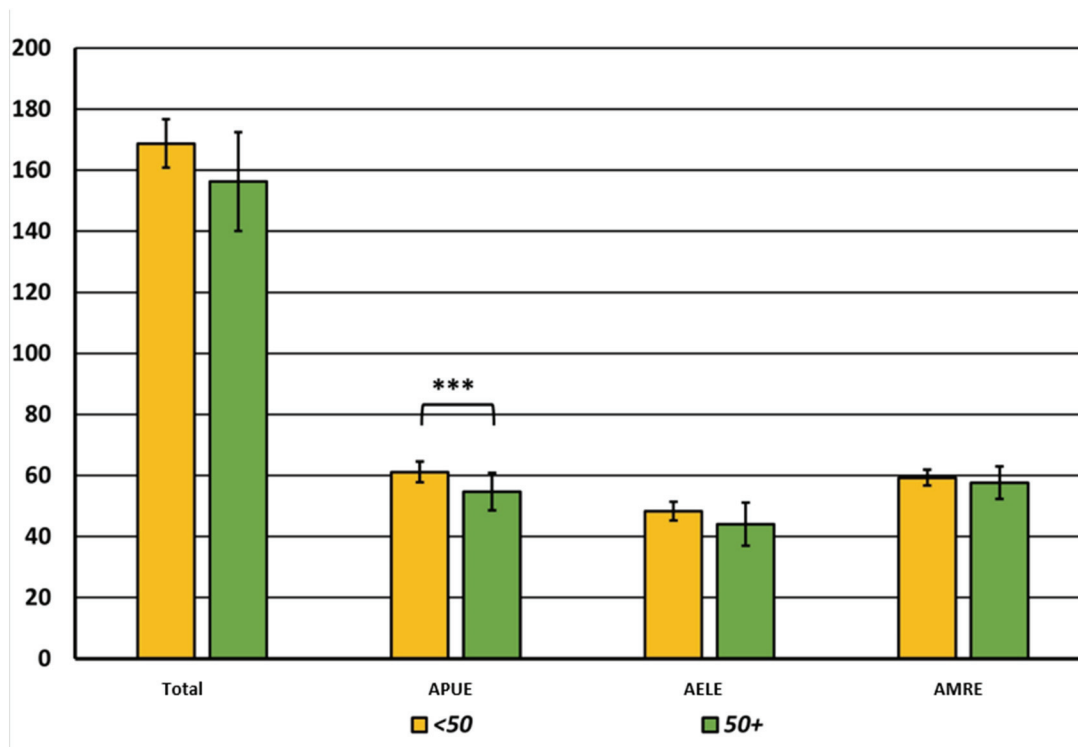


Figure 4: Comparisons in ESCQ scales by age group.

The results for the total score and APUE, AELE, and AMRE scales at the significance level $p=0.01$ (Figure 4). No significant differences by age group were found except for the APUE (Ability to perceive and understand emotions) scale (difference in means = 6.478, $t = 2.685$, $df = 45$, $*p=0.010$).

4 Discussion

Studying dental medicine and working in dentistry have been recognised as a demanding field, which is stressful and challenging (Polychronopoulou & Divaris 2009). Therefore, our pilot analysis aimed to examine the level of EI of the staff of the UMC Ljubljana Dental Clinic staff and the Department of Dental Medicine of the Faculty of Medicine of the University of Ljubljana staff who are involved in direct clinical work. EI is increasingly important in medicine, both for the mental health of health professionals and for the effectiveness of clinical practice (Birks et al. 2009). Very little is known about EI in dental medicine.

In our analysis, we received a good half of the responses from the staff of the UMC Ljubljana Dental Clinic and the staff of the Department of Dental Medicine of the Faculty of Medicine of the University of Ljubljana, who are involved in the implementation of the clinical work. The relatively low response rate can also be explained by the participants' fear that the survey was not anonymous, as the link was sent to their e-mail addresses. Administrative staff and radiological engineers responded in full, with the smallest proportion of responses coming from nurses and middle nurses. Due to the insufficient number of respondents in each occupational group, we did not analyse the level of EI among different occupational groups. However, the proportion of responses received is a telling indication of the importance of EI that some members of dental teams ascribe.

Analysis showed a higher level of EI among female participants relative to male participants which is in line with studies by Chen et al. (2012), Coskun et al. (2018), and Imran et al. (2013). There are various possible explanations for this trend; firstly, there is an evolutionary reason. A higher level of EI enabled women to be more responsive to the needs of children and other members of the family/group. This

enabled them to develop more healthily (both mentally and physically) and to function better, thus contributing to the well-being of humanity.

Secondly, from the year they were born, girls have normally gone through (primary and secondary) gender-normative socialization. Systematically, girls and women have received messages related to gender-specific norms from their caregivers and society as a whole. Thus, girls and women have been encouraged to show gender-appropriate behavior and, conversely, discouraged from gender-inappropriate behavior. For example, girls and women have been generally expected to dress in typically feminine ways and be polite, accommodating, and nurturing. Boys and men have been generally expected to be strong, aggressive, and bold. Although these expectations may vary as they are society- and culture-specific, in our society gender-specific norms have prevailed to this day.

Combining both evolutionary and gender-normative socialization factors in the workplace context means bringing us closer to the understanding of higher levels of EI among female participants relative to male participants. Organizational socialization tends to perpetuate society's expectations related to gender norms. What is more, organizational culture may even reward gender-specific roles by promoting individuals who show more gender-stereotypical behaviors (e.g. determination and domination vs. nurturing behavior and conflict avoidance).

Healthcare institutions are no exception in this realm. They are often hierarchical and rigid. Working in medical institution means one needs to excel in one's professional field by complying with the strong organizational culture and with tight norms at the same time. Though they are a necessary and natural component of organizational structure, hierarchies must be adaptable and human-centered, striking a balance between empathy and efficiency.

In addition, our analysis showed a higher level of EI, although not statistically significant (except for the ability to perceive and understand emotions scale), in younger respondents. In contrast, Coskun et al. (2018) showed a higher level of EI in older doctors. In their study, doctors younger than 29 years old had the lowest average EI scores. As physicians gained more experience in healthcare, they received higher EI scores. In line with this, a study by Ravikumar et al. (2017) showed similar positive association between EI and age in their sample of postgraduate medical students. While it is difficult to pinpoint the causes of non-compliance in the findings, a few possible explanations are offered.

Firstly, our sample and samples by Coskun et al. (2018) and Ravikumar et al. (2017) are not (entirely) comparable; while these authors studied family physicians and medical students, our sample was comprised of all team members in dental teams, involving various professions in healthcare. Secondly, the small sample size in our study does not allow us to draw firm conclusions regarding trends in EI development/regression in healthcare workers. Further studies are needed, comprising a greater number of participants. Thirdly, when making comparisons of our study results with other studies we also need to stress another study shortcoming; namely, many other study findings are based on medical students' samples. Comparing distinct participant cohorts is difficult since it is still unclear whether and how EI changes over the course of a person's lifetime.

In line with this and the discussion by Lewis et al. (2005), there is an ongoing debate about what constitutes EI; multiple models and operationalizations do not allow concluding whether EI is an ability (thus more or less an inborn psychological quality), such as in model by Salovey and Mayer (1990) or a set of competencies (thus a set of skills that are learned) such as in a model by Goleman (1998). While study results by Coskun et al. (2018) and Ravimukar et al. (2017) are more in line with Goleman's model (physicians learn EI skills with more experience in healthcare), our results are more consistent with Salovey and Mayer's (1990) model. If EI is a set of abilities, we do not expect differences between different generations of healthcare professionals. Lastly, in line with our previous argument, as there is no unique model of EI, it is difficult (or rather impossible) to compare various study findings in case researchers used different measures of EI.

It should be stressed that working in the Slovenian healthcare system is challenging, as patient pressure is high, not least due to extremely long waiting times. Patient pressure is also high at the Dental Clinic, where specialised activity is carried out at the secondary and tertiary level. The norms of dental work require high effort from everyone in the team, and these are probably just some of the reasons why the results from our older age group showed lower levels of EI. This is also in line with Abdali et al. (2020) and Liu et al. (2018) who suggested a negative association between fatigue and EI: a tired doctor is typically less able to engage in EI behaviors.

4.1 Conclusions

To conclude, EI plays an important role in dental medicine. Our pilot analysis showed the value of EI among the staff of the Dental Clinic. Additionally, statistically higher levels of EI were shown in female participants. The results of this pilot analysis may serve as a basis for an in-depth analysis of EI levels; an in-depth and longitudinal analysis of EI levels throughout dental professionals' careers might help us to understand if and how EI levels change over the years of work in dental medicine. In addition, a comparative analysis of the EI levels among different occupational groups in dental medicine could provide insightful information about their (missing) EI skills.

The study findings could serve as a foundation for the development of awareness programs in the field of dental medicine. For example, tailor-made short training with real-life EI-related problems and scenarios for each occupational group could offer insight into the importance of EI in the workplace, foster skill development, and raise awareness.

In line with the literature (Kassam et al. 2020; Liu et al. 2018; Castro et al. 2017; Lieberman et al. 2007; Longhurst 1988), university curricula should incorporate learning EI skills (such as reflexive practices, affect labeling, emotional regulation, and effective communication skills) into university healthcare education. This will contribute to patient-centered practice and patient satisfaction in dental medicine. Additionally, developing EI will help medical staff and their institutions. According to Liu et al. (2018) and Abdali et al. (2020) EI helps medical professionals to combat fatigue. Furthermore, Arora et al. (2010) and Jahan et al. (2022) have found EI is associated with effective coping with stress, greater organisational loyalty and better leadership.

In the future, EI related skills will be in high demand due to several factors, such as the diversity of the workforce, the change of generations working in healthcare, and the increasing sensitivity of both patients and healthcare professionals. Last but not least, scientific knowledge about the association between high levels of EI among healthcare professionals (patient-centered practice) and patient well-being (higher satisfaction with treatment, higher trust, and better treatment outcomes) talks for itself. Authorities in healthcare need to invest a lot more energy in restructuring curricula, and to develop incentive programs for health professionals who are already studying EI and/or incorporating EI skills into their day-to-day professional interactions.

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